

**CITY OF PHOENIX, ARIZONA**  
**OFFICE OF THE CITY ENGINEER**



**PROJECT SPECIFICATIONS AND CONTRACT DOCUMENTS**

GRAND CANALSCAPE PHASE I  
UPTOWN AND GATEWAY NORTH  
PROJECT NO. ST87600074 AND AR63000013

**MAYOR**

**GREG STANTON**

**CITY COUNCIL**

DISTRICT NO. 1 – THELDA WILLIAMS	DISTRICT NO. 5 – DANIEL VALENZUELA
DISTRICT NO. 2 – JIM WARING	DISTRICT NO. 6 – SAL DICICCIO
DISTRICT NO. 3 – DEBRA STARK	DISTRICT NO. 7 – MICHAEL NOWAKOWSKI
DISTRICT NO. 4 – LAURA PASTOR	DISTRICT NO. 8 – KATE GALLEG0

**CITY MANAGEMENT**

**CITY MANAGER  
CITY ENGINEER**

**ED ZUERCHER  
KINI L. E. KNUDSON, PE**



## TABLE OF CONTENTS

PROJECT TITLE: GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH  
PROJECT NO. ST87600074 AND AR63000013

### SECTION I – Informative

	<u>Page</u>
(1) Call for Bids	C.F.B. - 1 to 2
(2) Information for Bidders	I.F.B. - 1 to 12
(3) Construction Trade Identification Worksheet	C.T.I.W. - 1
(4) Supplementary Conditions	S.C. - 1 to 22
(5) Special Provisions	S.P. - 1 to 18
(6) Guidelines for Handling Sonoran Desert Tortoises	D.T.G. - 1
(7) Storm Water Pollution Prevention Plan	S.W.P.P.P - 1 to 13
(8) APS Company T&D Construction Standards 1124 and 1136	A.P.S. -1 to 4
(9) Soils Report and Materials Log	71 Pages

### SECTION II - Submittals

(1) Bid Proposal	P. - 1 to 10
(2) Proposal Submittal	P.S. - 1
(3) Surety Bond	S.B. - 1
(4) Small Business Enterprise Clause and Submittal Documents	SBE 1 to 12
(5) Bidder's Statement of Proposed SBE Utilization	S.B.U. - 1
(6) Letter of Intent to Perform as a SBE Subcontractor/Supplier	L.O.I.-1
(7) Letter of Intent to Perform as a Subcontractor/Supplier Instructions & Worksheet	L.O.I.W-1
(8) List of Major Subcontractors and Suppliers	L.O.S. - 1
(9) List of All Subcontractors and Suppliers	L.O.S. - 2
(10) Bidder's Disclosure Statement	B.D.S.-1 to 4
(11) Affidavit of Identity	A.O.I. - 1

### SECTION III – Technical Specifications and

- (1) Text for Trail Marker Cover Plates
- (2) Plan Sheets



### Page

1 Page  
153 Pages



## **CALL FOR BIDS**

### **GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH**

#### **DESIGN BID BUILD**

**PROJECT NO. ST87600074 AND AR63000013**

**BIDS WILL BE DUE  
TUESDAY, APRIL 18, 2017 AT 2:00 P.M., LOCAL TIME  
PHOENIX CITY HALL  
200 WEST WASHINGTON STREET, 6<sup>th</sup> FLOOR  
PHOENIX, AZ. 85003-1611**

The City of Phoenix is seeking a qualified contracting firm to perform the project listed below.

#### **SCOPE OF WORK**

At a minimum, the Contractor will be expected to successfully perform the following construction services, including but not limited to: construct a 10-foot concrete pathway along the north bank of the Grand Canal between 15<sup>th</sup> Avenue and 16<sup>th</sup> Street and along the south bank of the Grand Canal between approximately 36<sup>th</sup> Street and Van Buren Street including pathway lighting; landscape and irrigation; and artist-designed features such as shade canopies, benches, landscape walls, trail markers and pavers.

A Small Business Enterprise goal of **16%** has been established for this project.

#### **PRE-BID CONFERENCE**

A pre-bid conference meeting will be held on **Monday, April 3, 2017, at 9:00 a.m.** local time, at DCM Gecko Conf Room STR - 1034 E. Madison Street, Phoenix, AZ 85034. At this meeting, staff will discuss the scope of work, general contract issues and respond to questions from the attendees. As City staff will not be available to respond to individual inquiries regarding the project scope outside of this pre-bid conference, it is strongly recommended that interested firms send a representative to the pre-bid conference.

#### **REQUEST FOR BID PACKET**

The bid packet will be available for download from the City of Phoenix Street Transportation Department web page as of **Thursday, March 23, 2017**. The web address is:

<http://phoenix.gov/streets/procurement/easopportunities/index.html>

Firms receiving a copy of the bid packet through any other means must download the bid packet from the City web page in order to register as a plan holder for the project. The plan holder list is available for viewing within the project's folder on the Street Transportation Department Contract Procurement Section "Current Opportunities by Due Date" website address listed above.

### **GENERAL INFORMATION**

The City reserves the right to award the contract to the lowest responsible responsive bidder or all bids will be rejected, as soon as practicable after the date of opening bids. The City of Phoenix will provide reasonable accommodations for alternate formats of the bid packet by calling George Goodale at (602) 534-8352 or calling TTY System (602) 256-4286. Requests will only be honored if made within the first week of the advertising period. Please allow a minimum of seven calendar days for production.

Questions pertaining to process or contract issues should be directed to George Goodale, Contracts Specialist, at [george.goodale@phoenix.gov](mailto:george.goodale@phoenix.gov).

ED ZUERCHER  
City Manager

By   
KINI L.E. KNUDSON, PE  
City Engineer

Published: Arizona Business Gazette  
Date: Thursday, March 23, 2017  
Date: Thursday, March 30, 2017  
(Districts 4 and 8)

## INFORMATION FOR BIDDERS

1. **102 BIDDING REQUIREMENTS AND CONDITIONS**, Add the following to **MAG and COP Supplement to MAG Section 102 BIDDING REQUIREMENTS AND CONDITIONS**:

### INFORMATION FOR BIDDERS

#### A. **QUESTIONS ON PLANS AND SPECIFICATIONS**

**Neither the Engineer nor the City of Phoenix will be held responsible for any oral instructions. Any changes to the plans and specifications will be in the form of an addendum. All Addenda will be posted online within the project folder at the following website:**

<https://www.phoenix.gov/streets/procurement/current-opportunities>

A Planholder List is available within the project folder on the Street Transportation Department website under "Current Opportunities". The web address is:

<https://www.phoenix.gov/streets/procurement/current-opportunities>

For additional information prior to submitting your bid, contact:

Plans, Technical/Special Provisions, Proposal or Specifications:

NAME: George Goodale, Contracts Specialist, Contract Procurement Section

ADDRESS: 200 W. Washington Street, 6<sup>th</sup> Floor, Phoenix, AZ 85003-1611

PHONE: (602) 534-8352 E-MAIL: [George.Goodale@phoenix.gov](mailto:George.Goodale@phoenix.gov)

SBE Utilization contact:

Equal Opportunity Department: (602) 262-6790

**All questions regarding the plans and specifications must be received (in writing) at a minimum 7 calendar days prior to bid opening. Questions received after that time may not be given any consideration.**

#### B. **REQUEST FOR SUBSTITUTIONS**

Paragraph A, B, and C of MAG Section 106.4 are deleted and the following paragraphs substituted:

1. The Engineer will consider written request(s), by a prime bidder only, for substitution(s) which is/are considered equivalent to the item(s) specified in the Contract documents. The written request will be considered only if it is received at least twelve (12) calendar days prior to the established bid date. Notification of acceptable substitutions will be made by addendum issued no fewer than 7 calendar days prior to the established bid date. (A.R.S. 34-104)
2. The prime bidder, at his own expense, will furnish the necessary data of substitution and validate that the physical, chemical, and operational qualities of each substitute item is such that this item will fulfill the originally specified required function.
3. The substitution, if approved, will be authorized by a written addendum to the Contract documents and will be made available to all bidders. The bid date and the scheduled completion time will not be affected by any circumstances developing from this substitution.

4. The request will be submitted to the Street Transportation Department Contract Procurement Section, Attention George Goodale, Sixth Floor, Phoenix City Hall, 200 W. Washington Street, Phoenix, Arizona 85003-1611 or via email to [George.Goodale@phoenix.gov](mailto:George.Goodale@phoenix.gov).

C. **BID BOND**

Bidders must submit a properly completed proposal guarantee, certified check, cashier's check or on the surety bond provided, for an amount not less than ten (10) percent of the total amount bid included in the proposal as a guarantee that the contractor will enter into a contract to perform the proposal in accordance with the plans and specifications. Surety bonds submitted for this project will be provided by a company which has been rated "A- or better for the prior four quarters" by the A.M. Best Company. ***A bid will be deemed non-responsive if not accompanied by this guarantee.***

The surety bond will be executed solely by a surety company or companies holding a certificate of authority to transact surety business in the State of Arizona, issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1. The surety bond will not be executed by an individual surety or sureties even if the requirements of Section 7-101 are satisfied. The City Clerk will return the certified check, cashier's check, or surety bond to the contractors whose proposals are not accepted, and to the successful contractor upon the execution of a satisfactory bond and contract.

When providing a Surety Bond, ***failure to provide an "A- or better for the prior four quarters" bond will result in bid rejection.***

D. **LIST OF MAJOR SUBCONTRACTORS AND SUPPLIERS & LIST OF ALL SUBCONTRACTORS AND SUPPLIERS**

***A bid will be deemed non-responsive if not accompanied by a properly completed and signed "List of Major Subcontractors and Suppliers" form.***

To assist in eliminating the practice of bid shopping on City construction projects, the bidder will list all Major Subcontractors and Suppliers (including SBE) to whom the bidder intends to contract with that are equal to or greater than 5% of the base bid. The list of major subcontractors and suppliers will be provided on the "List of Major Subcontractors" form. ***Failure to properly complete and sign this form will result in bid rejection.*** This form is due with the bid.

If substantial evidence exists that bid shopping occurred on this project, the Bidder will be ineligible to bid on City construction projects for a period of one year.

The list of All Subcontractors and Suppliers will be provided on the "List of All Subcontractors and Suppliers" form. ***Failure to properly complete and sign this form will result in bid rejection. This form is due 3 days after bid opening by 5:00 p.m.*** A bid will be deemed non-responsive if a properly completed and signed "List of All Subcontractors and Suppliers" form is not submitted.

E. **BID SUBMITTAL**

The properly completed bid documents along with the ten (10) percent bid guarantee will be submitted in a sealed envelope. The outside of the envelope will be marked as follows:

Bid of (Firm's Name, Address and Phone Number)

For: GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH

City of Phoenix Project Number: ST87600074 AND AR63000013

Sealed bids will be submitted to the bid box located by the Street Transportation Department Reception Desk located on the Sixth Floor of the Phoenix City Hall Building, 200 W. Washington Street, Phoenix, Arizona, 85003 prior to the time and date specified for bid opening.

F. **BID WITHDRAWALS**

MAG Section 102-10, Withdrawal or Revision of Proposal, is hereby deleted and the following paragraph is submitted:

"No bidder may withdraw or revise a proposal after it has been deposited with the City except as provided in Phoenix City Code Chapter 2, Section 190.2. Proposals, read or unread, will not be returned to the bidders until after determination of award has been made.

G. **ADDENDA**

***Acknowledge all addenda; a bid will be deemed non-responsive if all issued addenda for this project are not acknowledged in writing on Page P. -1.***

The City of Phoenix will not be responsible for any oral responses or instructions made by any employees or officers of the City of Phoenix regarding bidding instructions, plans, drawings, specifications or contract documents. A verbal reply to an inquiry does not constitute a modification of the Invitation for Bid (IFB). Any changes to the plans, drawings and specifications will be in the form of an addendum.

It will be the responsibility of the prospective bidder to determine, prior to the submittal of its bid, if any addenda to the project have been issued by the Street Transportation Department Contract Procurement Section. All addenda issued will be acknowledged by the bidder on Page P-1. All addenda (if any) will be available online within each project's folder at the following website:

<https://www.phoenix.gov/streets/procurement/current-opportunities>

**The contractors and/or consultants are responsible for ensuring they have all addenda and/or notifications for all projects they are submitting on. Prospective bidders are strongly encouraged to check the Street Transportation Department Contract Procurement website in order to ascertain if any addenda have been issued for the project.**

H. **BID SUBMITTAL CHECKLIST**

**BID SUBMITTAL CHECKLIST**

This checklist is provided to remind bidders of several of the required elements of the bid packages. It is not intended to be a comprehensive list of all of the contract documents. Bidders are encouraged to review all of the Bid Instructions to determine compliance therein.

- Acknowledge all addenda? (Page P-1)
- Completed all of the Bid Proposal forms? (Pages P-1 to P-10 and P.S. - 1)
- Included your Bid Bond (rated A- or better for the prior four quarters) or Guarantee Cashier's Check? (Page S.B.-1)
- Completed SBE Utilization form or a fully documented waiver package? (Page S.B.U.-1)

- Completed List of Major Subcontractors and Suppliers form? (Page L.O.S.-1)
- Completed Letter of Intent to Perform as Subcontractor/Supplier (L.O.I-1)

**PLEASE DO NOT SUBMIT THE ENTIRE SPECIFICATION BOOK WHEN SUBMITTING YOUR BID. INCLUDE ONLY THE REQUIRED BIDDING DOCUMENTS.**

#### POST-BID SUBMITTAL CHECKLIST

All bidders wishing to remain in contention for award of the contract must submit completed contracts documents listed below. The documents must be submitted to the Street Transportation Department Contract Procurement Section, 6th Floor, or can be sent by email to [George.Goodale@phoenix.gov](mailto:George.Goodale@phoenix.gov).

- Completed List of All Subcontractors and Suppliers form (L.O.S.-2) (3 days after bid opening by 5:00 p.m.)
- Bidders Disclosure Statement? (Pages B.D.S.-1 to 4) (3 days after bid opening by 5:00 p.m.)
- Submit Affidavit of Identity (if you are a sole proprietor) (Page A.O.I. – 1) (3 days after bid opening by 5:00 p.m.)

#### **I. CANCELLATION OF CONTRACT FOR CONFLICT OF INTEREST**

All parties hereto acknowledge that this Agreement is subject to cancellation by the City of Phoenix pursuant to the provisions of Section 38-511, Arizona Revised Statutes.

#### **J. CONTRACTOR'S LICENSE AND PRIVILEGE LICENSE AND CERTIFICATIONS**

Prior to bidding on this project, the bidder must possess the correct license to perform the work described in the plans and specifications. Prior to award of the contract, the successful bidder must provide to the Contract Procurement Section its Contractor's License Classification and number, its City of Phoenix Privilege License number and Federal Tax Identification number.

Bidder will submit the Bidder's Disclosure Statement as set forth in Pages B.D.S. - 1 to B.D.S. - 4 within 3 days of bid opening by 5:00 p.m.

Unless provided otherwise in this solicitation, Bidder will be deemed non-responsive and the bid rejected if Bidder fails to possess the proper Contractor's and Business Licenses at the time of bid or fails to submit a substantially completed Bidder's Disclosure Statement as specified above.

#### **K. TAX LIABILITIES; DISCLOSURE OF CONVICTIONS AND BREACH(S) OF CONTRACT**

On or before the award of the contract for this project, the successful bidder will: (i) file all applicable tax returns and will make payment for all applicable State of Arizona and Maricopa County Transaction Taxes (ARS Sec. 41-1305) and City of Phoenix Privilege License Taxes (Phoenix City Code Sec.14-415); (ii) disclose any civil fines, penalties or any criminal convictions, other than for traffic related offenses, for violation of federal, state, county or city laws, rules or regulations including, but not limited to, environmental, OSHA, or labor compliance laws (collectively "Laws") by Bidder, Bidder's directors, managing members, responsible corporate officers or party who will be responsible for overseeing and administering this project (collectively "Bidder"); and (iii) disclose any material breach(s) of an

agreement with the City of Phoenix, any termination for cause or any litigation involving the City of Phoenix occurring within the past three calendar years. Unless provided otherwise in this solicitation, the successful bidder will be deemed non-responsible and the bid rejected for any of the following: (i) Bidder's civil or criminal conviction, other than for traffic related offenses, for a violation of Laws within the past three calendar years; (ii) liability or culpability resulting in payment of fines or penalties in the cumulative total amount of \$100,000 or greater for a violation of "Laws" within the past three calendar years; (iii) material breach of a City of Phoenix agreement, termination for cause or litigation with the City of Phoenix within the past three calendar years; and (iv) Bidder's failure to disclose the information as required by this provision. Further, after award of contract, in addition to any other remedy, Bidder's failure to remit proper taxes to the City of Phoenix may result in the City withholding payment pursuant to Phoenix City Charter Chapter XVIII, Section 14 until all delinquent taxes, interest, and penalties have been paid.

State and Local Transaction Privilege Taxes:

In accordance with applicable state and local law, transaction privilege taxes may be applicable to this transaction. The state and local transaction privilege (sales) tax burden is on the person who is conducting business in Arizona and the City of Phoenix. The legal liability to remit the tax is on the person conducting business in Arizona. Any failure by the Contractor to collect applicable taxes from the City will not relieve the Contractor from its obligation to remit taxes.

It is the responsibility of the prospective bidder to determine any applicable taxes. The City will look at the price or offer submitted and will not deduct, add or alter pricing based on speculation or application of any taxes, nor will the City provide advice or guidance.

If you have questions regarding your tax liability, please seek advice from a tax professional prior to submitting your bid. You may also find information at <https://www.phoenix.gov/finance/pli> or <https://www.azdor.gov/Business.aspx>. Once your bid is submitted, the Offer is valid for the time specified in this Solicitation, regardless of mistake or omission of tax liability.

If the City finds over payment of a project due to tax consideration that was not due, the Contractor will be liable to the City for that amount, and by contracting with the City agrees to remit any overpayments back to the City for miscalculations on taxes included in a bid price.

Tax Indemnification:

Contractor will, and require the same of all subcontractors, pay all federal, state and local taxes applicable to its operation and any persons employed by the Contractor. Contractor will, and require the same of all subcontractors, hold the City harmless from any responsibility for taxes, damages and interest, if applicable, contributions required under federal, and/or state and local laws and regulations and any other costs including transaction privilege taxes, unemployment compensation insurance, Social Security and Worker's Compensation.

Tax Responsibility Qualification:

Contractor may be required to establish, to the satisfaction of City, that any and all fees and taxes due to the City or the State of Arizona for any License or Transaction Privilege taxes, Use Taxes or similar excise taxes, are currently paid (except for matters under legal protest).

Contractor agrees to a waiver of the confidentiality provisions contained in the City Finance Code and any similar confidentiality provisions contained in Arizona statutes relative to State Transaction Privilege Taxes or Use Taxes.

Contractor agrees to provide written authorization to the City Finance Department and to the Arizona State Department of Revenue to release tax information relative to Arizona



Transaction Privilege Taxes or Arizona Use Taxes in order to assist the Department in evaluating Contractor's qualifications for and compliance with contract for duration of the term of contract.

**L. STANDARD SPECIFICATIONS AND DETAILS**

Except as otherwise required in these specifications, bid preparation and construction of this project will be in accordance with all applicable Maricopa Association of Governments' (MAG) Uniform Standard Specifications and Uniform Standard Details, latest revision, and the City of Phoenix Supplements to the MAG Uniform Standard Specifications and Details, latest revision.

**M. PRECEDENCE OF CONTRACT DOCUMENTS**

In case of a discrepancy or conflict, the precedence of contract documents is as follows:

1. Change Orders or Supplemental Agreements
2. Addenda
3. Contract Specifications/Special Provisions/Technical Provisions
4. The Plans
5. COP Supplement to MAG Standard Specifications and Details, latest revision
6. MAG Standard Specifications and Details, latest revision

The precedence of any Addenda falls within the category of which it represents.

**N. CONFIDENTIALITY OF PLANS & SPECIFICATIONS**

Any plans generated for this project must include the following statement in the Title Block on every page: "Per City of Phoenix City Code Chapter 2, Section 2-28, these plans are for official use only and may not be shared with others except as required to fulfill the obligations of Contractor's contract with the City of Phoenix."

**O. AUDIT AND RECORDS**

Records of the Contractor's direct personnel payroll, bond expenses, and reimbursable expenses pertaining to this Project, and records of accounts between the City and Contractor will be kept on the basis of generally accepted accounting principles and must be made available to the City and its auditors for up to three years following Final Acceptance of the Project.

The City, its authorized representative, and/or any federal agency, reserves the right to audit the Contractor's records to verify the accuracy and appropriateness of all cost and pricing data, including data used to negotiate the Contract and any change orders.

The City reserves the right to decrease Contract price and/or payments made on this Contract and/or request reimbursement from the Contractor following final contract payment on this Contract if, upon audit of the Contractor's records, the audit discloses the Contractor has provided false, misleading, or inaccurate cost and pricing data.

The Contractor will include a similar provision in all of its Agreements with subcontractors and suppliers providing services or supplying materials under the Contract Documents to ensure that the City, its authorized representative, and/or the appropriate federal agency has access to the Subcontractor's and Supplier's records to verify the accuracy of all cost and pricing data.

The City reserves the right to decrease the Contract price and/or payments made on this



Contract and/or request reimbursement from the Contractor following final contract payment on this Contract if the above provision is not included in the Subcontractor's and Supplier's contracts, and one or more Subcontractors or Suppliers refuse to allow the City to audit their records to verify the accuracy and appropriateness of cost and pricing data.

If, following an audit of this Contract, the audit discloses the Contractor has provided false, misleading or inaccurate cost and pricing data, and the cost discrepancies exceed 1% of the total Contract billings, the Contractor will be liable for reimbursement of the reasonable, actual cost of the audit.

P. **IMMIGRATION REFORM AND CONTROL ACT**

Compliance with Federal Laws Required. Contractor understands and acknowledges the applicability of the Immigration Reform and Control Act of 1986 and the Drug Free Workplace Act to it. Contractor agrees to comply with these Federal Laws in performing under this Agreement and to permit City inspection of its personnel records to verify such compliance.

Q. **LEGAL WORKER REQUIREMENTS**

The City of Phoenix is prohibited by A.R.S. § 41-4401 from awarding a contract to any contractor who fails, or whose subcontractors fail, to comply with A.R.S. § 23-214(A). Therefore, Contractor agrees that:

1. Contractor and each subcontractor it uses warrants their compliance with all federal immigration laws and regulations that relate to their employees and their compliance with § 23-214, subsection A.
2. A breach of a warranty under paragraph 1 will be deemed a material breach of the contract that is subject to penalties up to and including termination of the contract.
3. The City of Phoenix retains the legal right to inspect the papers of any Contractor or subcontractor employee who works on the contract to ensure that the Contractor or subcontractor is complying with the warranty under paragraph 1.

R. **CONTRACTOR AND SUBCONTRACTOR WORKER BACKGROUND SCREENING**

**Background Screening Requirements and Criteria**

The City has established levels of risk and associated Background Screening. For Contractor services in the right-of-way, the risk level and Background Screening required is Minimum Risk. **The risk level and background screening required for this project is Minimum.**

Terms of This Section Applicable to all of Contractor's Contracts and Subcontracts  
Contractor will include the terms of this Section for Contract Worker Background Screening in all contracts and subcontracts for services furnished under this Agreement including, but not limited to, supervision and oversight services.

(1.) **Contract Worker Background Screening**

Contractor agrees that all contract workers and subcontractors (collectively "Contract Worker(s)") that Contractor furnishes to the City pursuant to this Agreement will be subject to background and security checks and screening (collectively "Background Screening") at Contractor's sole cost and expense as set forth in this Section. The Background Screening provided by Contractor will comply with all applicable laws, rules and regulations. Contractor further agrees that the Background Screening required in this Section is necessary to preserve and protect public health, safety and welfare. The

Background Screening requirements set forth in this Section are the minimum requirements for this Agreement. The City in no way warrants that these minimum requirements are sufficient to protect Contractor from any liabilities that may arise out of Contractor's services under this Agreement or Contractor's failure to comply with this Section. Therefore, in addition to the specific measures set forth below, Contractor and its Contract Workers will take such other reasonable, prudent and necessary measures to further preserve and protect public health, safety and welfare when providing services under this Agreement. The City may, in its sole discretion, accept or reject any or all of the Contract Workers proposed by Contractor to perform work under this Agreement, as well those Contract Workers actually providing services during the term of this Agreement.

Minimum Risk Background Screening requirements include the following:

A Minimum Risk Background Screening will be performed when the Contract Worker: (i) will not have direct access to City facilities or information systems; or (ii) will not work with vulnerable adults or children; or (iii) when access to City facilities is escorted by City workers. The Background Screening for minimum risk will consist of the screening required by Arizona Revised Statutes §§ 41-4401 and following to verify legal Arizona worker status.

Standard Risk and Background Screening requirements include the following:

A Standard Risk Background Screening will be performed when the Contract Worker's work assignment will: (i) require a badge or key for access to City facilities; or (ii) allow any access to sensitive, confidential records, personal identifying information or restricted City information; or (iii) allow unescorted access to City facilities during normal and non-business hours. The Background Screening for this standard risk level will include the Background Screening required for the Minimum Risk level and a background check for real identity/legal name, and will include felony and misdemeanor records from any county in the United States, the state of Arizona, plus any other jurisdiction where the Contract Worker has lived at any time in the preceding seven (7) years from the Contract Worker's proposed date of hire.

Maximum Risk Background Screening requirements include the following:

A Maximum Risk Background Screening will be performed when the Contract Worker's work assignment will: (i) have any contact with vulnerable people such as children, youth, elderly, or individuals with disabilities; or (ii) have any responsibility for the receipt or payment of City funds or control of inventories, assets, or records that are at risk of misappropriation; or (iii) have unescorted access to City data centers, money rooms, or high-value equipment rooms; or (iv) have access to private residences; or (v) have access to Homeland Defense Bureau identified critical infrastructure sites/facilities. The Background Screening for this maximum risk level will include the Background Screening required for the Standard Risk level, plus a sexual offender search, a credit check, and driving record search for the preceding seven (7) years from the Contract Worker's proposed date of hire. Contract Workers who work directly with children or vulnerable adults are also subject to fingerprint verification through the Arizona Department of Public Safety as mandated by Phoenix City Code, § 2-45.6.

Contractor Certification; City Approval of Maximum Risk Background Screening

By executing this Agreement, Contractor certifies and warrants that Contractor has read the Background Screening requirements and criteria in this Section, understands them and that all Background Screening information furnished to the City is accurate and current. Also, by executing this Agreement, Contractor further certifies and warrants that Contractor has satisfied all such Background Screening requirements for the Minimum

Risk and Standard Risk Background Screenings as required. In addition, for Maximum Risk Background Screening, Contractor will furnish to [insert department contact information] for the City's review and approval such Background Screenings for any Contract Worker considered for performing services under this Agreement where human safety or facility security is classified as a Maximum Risk level. The subject Contract Worker will not apply for the appropriate City of Phoenix identification and access badge or keys until Contractor has received the City's written acceptance of the subject Contract Worker's Maximum Risk Background Screening. A Contract Worker rejected for work at a Maximum Risk level under this Agreement will not be proposed to perform work under other City contracts or engagements without City's prior written approval.

(2.) Materiality of Background Screening Requirements; Indemnity

The Background Screening requirements of this Section are material to City's entry into this Agreement and any breach of this Section by Contractor will be deemed a material breach of this Agreement. In addition to the indemnity provisions set forth in Supplementary Conditions Section 7.G of this Agreement, Contractor will defend, indemnify and hold harmless the City for any and all Claims (as defined in Supplementary Conditions Section 7.G arising out of this Background Screening Section including, but not limited to, the disqualification of a Contract Worker by Contractor or the City for failure to satisfy this Section.

(3.) Continuing Duty; Audit

Contractor's obligations and requirements that Contract Workers satisfy this Background Screening Section will continue throughout the entire term of this Agreement. Contractor will notify the City immediately of any change to a Maximum Risk Background Screening of a Contract Worker previously approved by the City. Contractor will maintain all records and documents related to all Background Screenings and the City reserves the right to audit Contractor's compliance with this Section pursuant to Information for Bidders Section 1.M.

S. **LAWFUL PRESENCE REQUIREMENT**

Pursuant to A.R.S. §§ 1-501 and 1-502, the City of Phoenix is prohibited from awarding a contract to any natural person who cannot establish that such person is lawfully present in the United States. To establish lawful presence, a person must produce qualifying identification and sign a City-provided affidavit affirming that the identification provided is genuine. This requirement will be imposed at the time of contract award. This requirement does not apply to business organizations such as corporations, partnerships or limited liability companies.

T. **LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED)**

If practical, the contractor will provide an easily accessible area to serve the construction site that is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, glass, plastics, metals, and designate an area specifically for construction and demolition waste recycling. The contractor must provide documentation that the materials have been taken to a Maricopa County approved recycling facility.

U. **NO ISRAEL BOYCOTT**

By entering into this contract, the Engineer/Contractor certifies that they are not currently engaged in, and agrees for the duration of the Contract to not engage in, a boycott of Israel.

V. **CITY OF PHOENIX EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENT**

1. In order to do business with the City, Contractor must comply with Phoenix City Code, 1969, Chapter 18, Article V, as amended, Equal Employment Opportunity Requirements.

Contractor will direct any questions in regard to these requirements to the Equal Opportunity Department, (602) 262-6790.

2. Any Contractor in performing under this contract will not discriminate against any worker, employee or applicant, or any member of the public, because of race, color, religion, sex, national origin, age, or disability nor otherwise commit an unfair employment practice. The Contractor will ensure that applicants are employed, and employees are dealt with during employment without regard to their race, color, religion, sex, national origin, age, or disability and will adhere to a policy to pay equal compensation to men and women who perform jobs that require substantially equal skill, effort, and responsibility, and that are performed within the same establishment under similar working conditions. Such action will include but not be limited to the following: Employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training; including apprenticeship. The Contractor further agrees that this clause will be incorporated in all subcontracts with all labor organizations furnishing skilled, unskilled and union labor, or who may perform any such labor or services in connection with this contract.

If the Contractor employs more than thirty-five employees, the following language will apply as the last paragraph to the clause above:

The Contractor further agrees not to discriminate against any worker, employee or applicant, or any member of the public, because of sexual orientation or gender identity or expression and will ensure that applicants are employed, and employees are dealt with during employment without regard to their sexual orientation or gender identity or expression.

3. *Documentation.* Contractor may be required to provide additional documentation to the Equal Opportunity Department affirming that a nondiscriminatory policy is being utilized.
4. *Monitoring.* The Equal Opportunity Department will monitor the employment policies and practices of suppliers and lessees subject to this article as deemed necessary. The Equal Opportunity Department is authorized to conduct on-site compliance reviews of selected firms, which may include an audit of personnel and payroll records, if necessary.

W. **PROTEST PROCEDURES**

A bidder wishing to file a protest for the subject project will comply with Phoenix City Code Chapter 2, Section 188.

X. **DATA CONFIDENTIALITY**

As used in the Contract, "data" means all information, whether written or verbal, including plans, photographs, studies, investigations, audits, analyses, samples, reports, calculations, internal memos, meeting minutes, data field notes, work product, proposals, correspondence and any other similar documents or information prepared by, obtained by, or transmitted to the Contractor or its subcontractors in the performance of this Contract.

The parties agree that all data, regardless of form, including originals, images, and reproductions, prepared by, obtained by, or transmitted to the Contractor or its subcontractors in connection with the Contractor's or its subcontractor's performance of this Contract is confidential and proprietary information belonging to the City.

Except as specifically provided in this Contract, the Contractor or its subcontractors will not divulge data to any third party without prior written consent of the City. The Contractor or its subcontractors will not use the data for any purposes except to perform the services required

under this Contract. These prohibitions will not apply to the following data provided the Contractor or its subcontractors have first given the required notice to the City:

- A. Data which was known to the Contractor or its subcontractors prior to its performance under this Contract unless such data was acquired in connection with work performed for the City;
- B. Data which was acquired by the Contractor or its subcontractors in its performance under this Contract and which was disclosed to the Contractor or its subcontractors by a third party, who to the best of the Contractor's or its subcontractor's knowledge and belief, had the legal right to make such disclosure and the Contractor or its subcontractors are not otherwise required to hold such data in confidence; or
- C. Data which is required to be disclosed by virtue of law, regulation, or court order, to which the Contractor or its subcontractor's are subject.

In the event the Contractor or its subcontractors are required or requested to disclose data to a third party, or any other information to which the Contractor or its subcontractors became privy as a result of any other contract with the City, the Contractor will first notify the City as set forth in this section of the request or demand for the data. The Contractor or its subcontractors will give the City sufficient facts so that the City can be given an opportunity to first give its consent or take such action that the City may deem appropriate to protect such data or other information from disclosure.

The Contractor, unless prohibited by law, within ten calendar days after completion of services for a third party on real or personal property owned or leased by the City, the Contractor or its subcontractors will promptly deliver, as set forth in this section, a copy of all data to the City. All data will continue to be subject to the confidentiality agreements of this Contract.

The Contractor or its subcontractors assume all liability for maintaining the confidentiality of the data in its possession and agrees to compensate the City if any of the provisions of this section are violated by the Contractor, its employees, agents or subcontractors. Solely for the purposes of seeking injunctive relief, it is agreed that a breach of this section will be deemed to cause irreparable harm that justifies injunctive relief in court. Contractor agrees that the requirements of this Section will be incorporated into all subcontracts entered into by Contractor. A violation of this Section may result in immediate termination of this Contract without notice.

#### Personal Identifying Information-Data Security

Personal identifying information, financial account information, or restricted City information, whether electronic format or hard copy, must be secured and protected at all times. At a minimum, Contractor must encrypt and/or password protects electronic files. This includes data saved to laptop computers, computerized devices or removable storage devices.

When personal identifying information, financial account information, or restricted City information, regardless of its format, is no longer necessary, the information must be redacted or destroyed through appropriate and secure methods that ensure the information cannot be viewed, accessed, or reconstructed.

In the event that data collected or obtained by Contractor or its subcontractors in connection with this Contract is believed to have been compromised, Contractor or its subcontractors will immediately notify the Project Manager and City Engineer. Contractor agrees to reimburse the City for any costs incurred by the City to investigate potential breaches of this data and, where applicable, the cost of notifying individuals who may be impacted by the breach.

Contractor agrees that the requirements of this Section will be incorporated into all

subcontracts entered into by Contractor. It is further agreed that a violation of this Section will be deemed to cause irreparable harm that justifies injunctive relief in court. A violation of this Section may result in immediate termination of this Contract without notice.

The obligations of Contractor or its subcontractors under this Section will survive the termination of this Contract.

Y. **PROJECT MANAGEMENT INFORMATION SYSTEM (PROMIS)**

The Street Transportation Department's Design and Construction Management (DCM) Project Manager may determine that use of PROMIS will be required during this contract. The following information provides a guideline for utilization. Any questions related to the requirements of PROMIS should be directed to the DCM Project Manager.

1. The contractor will be required to maintain all project records in electronic format. The City provides an Application Service Provider (ASP) web based project management database which the contractor will be required to utilize in the fulfillment of the contract requirements. Although this electronic platform does not fulfill this requirement in its entirety, the contractor will be required to utilize this platform as the basis for this work.
2. The contractor can expect to use this ASP to process all primary level tri-partite contract documents related to the design or construction phase of the Project including but not limited to: requests for interpretation/information, potential Change Orders, construction meeting minutes, Submittals, Design Professional's supplemental instructions, and Payment Requests.
3. The contractor will be required to process information into electronic digital form. In order to fulfill this requirement, the contractor will provide all necessary equipment to perform the functions necessary to generate, convert, store, maintain, connect to web based ASP and transfer electronic data.
4. The contractor will provide a computerized networked office platform with broadband internet connectivity. Wired or wireless is acceptable. This platform will function well in a web based environment utilizing an internet browser compatible with the City PROMIS ASP system.

PROMIS training will be provided through the City of Phoenix. Contact information will be provided to the firms under contract, to establish the set up with a log-in and password.



## CONSTRUCTION TRADE IDENTIFICATION WORKSHEET

PROJECT TITLE: GRAND CANALSCAPE PHASE I: UPTOWN AND GATEWAY NORTH

PROJECT NO.: ST87600074

Below is a listing of possible trade areas for this project.  
These were the trade areas identified in the goal setting process.  
However, the contractor may identify additional trade areas to be used.

Site  
Preparation/Earthwork/Excavation  
Asphalt Paving  
Demolition/Wrecking  
Pipeline / Underground Utilities  
Fencing  
Electrical  
Signage  
Specialty Items  
Street Lighting & Traffic Signal  
Site Clearing & Grubbing  
Surveying & Layout  
Traffic Control Devices  
Miscellaneous

Only SBE subcontractors certified by the City of Phoenix under Chapter 18, Article VII of the Phoenix City Code are eligible to fulfill the participation goal as stated. A firm's certification must be current and in force at the date and time of the bid. The most current electronic listing of all Certified SBE firms can be accessed through the Internet at:

<https://phoenix.diversitycompliance.com>

SBE: 16 %

## **SUPPLEMENTARY CONDITIONS**

1. Add the following to **MAG Section 102, BIDDING REQUIREMENTS AND CONDITIONS**:

A. **ART ELEMENTS IMPORTANT NOTES TO BIDDERS**

I. Concrete fabricators and aluminum fabricators are responsible for the creation of all necessary shop drawings for review and approval by the Engineer prior to fabrication. Any changes or deviations from the construction document's structural drawings may require additional sealed engineering drawings by the fabricator's engineer for review and approval by the Engineer. The Artist will also review changes from an aesthetic perspective.

II. Specifications and Testing: Prior to creating samples, the concrete fabricator must provide all material / product specifications (such as concrete mix design) and testing results for all mixes to be reviewed and approved by the Engineer. Mixes containing recycled content are preferred, but will need to meet all necessary performance standards (such as PSI) as required in the specifications (as defined on the project drawings).

III. Samples: Prior to full fabrication the concrete fabricator must create one B bench element, one W3 wall element, one TM1 Trail Marker, and one P1 paver element and one P2 paver element (as defined on the project drawings) as samples for approval by the Engineer. Color and finish samples must be provided to and approved prior to the creation of these samples. If samples are approved they may count toward the total number of finished product.

IV. Concrete fabricators should assume the following number of variations per element: P Elements - 10 variations; W1, W2, and W3 elements - 3 variations each; S elements - 3 variations; B elements - 4 variations. Variations impact the size and location of sculpted rubber mold inserts and/or sandstone inserts, but not the overall size or shape of the element.

V. The Artist is under contract with the City of Phoenix to provide certain materials for this project. The Artist shall provide ONLY the following materials for implementation of the project:

a. The Artist will provide Art Shop Drawings to the concrete fabricator. The location of all sculpted rubber mold inserts and sandstone inserts will be sized and identified by the Artist for each Art Element (S, B, W, etc..) as well as variations on those elements (S1, S2, S3, for example) in the Art Shop Drawings (separate from the fabricator's technical shop drawings). The Art Shop Drawings will be provided solely for the placement of the rubber inserts and to provide direction regarding the placement of the sandstone inserts. Not provided by Artist: Art Shop Drawing information will be incorporated into concrete fabricator's technical shop drawings by the fabricator.

b. The Artist will provide the Engineer and the aluminum fabricator a set of Art Shop Drawings (separate from the fabricators technical shop drawings) solely for the Sculpted Cast Aluminum Panels for review, coordination and approval by the Engineer and fabricator.

c. Upon written approval of V.A above the Artist will create all sculpted rubber mold inserts that are necessary for the fabrication of the concrete elements S, B, W, TM, and P. The sculpted rubber mold inserts will be created from high quality urethane rubber and will be expected to be used by the concrete fabricator up to 30 times each (as necessary). The Artist will supply the sculpted rubber mold inserts to the fabricator; the fabricator is responsible for returning the rubber mold inserts to the Artist at the end of the fabrication.



d. Upon written approval of V.B above the Artist will create all Sculpted Cast Aluminum Panels and will supply them to the fabricator responsible for creating the aluminum shade structures. The Sculpted Cast Aluminum Panels will not be provided with any pre-drilled holes.

e. The Artist will provide the text (as well as text size and layout) for the Trail Marker Cover Plate on detail D5 of sheet 153. The Artist is NOT responsible for the procurement of the Trail Marker Cover Plate.

VI. The Artist has selected "Bermuda Dunes" Sandstone for this project to be embedded in the cast concrete art elements per detail D4 on sheet 153. The concrete fabricator must procure this stone and should assume 180 square feet total of  $\frac{3}{4}$ " saw finished stone – which will be cut to a variety of small sizes to fit the placement in S, B, and W elements as noted in the drawings. The Trail Markers (TM elements) will have larger pieces of stone embedded in the concrete. Fabricator should assume up to 720 holes ( $\frac{1}{2}$ " deep,  $\frac{3}{8}$ " wide) for the back sides of these stone embeds to accommodate detail D4 on sheet 153. One potential source for the Bermuda Dunes Sandstone (with holes) is "Robert Stone - 2317 Interstate Avenue, Grand Junction, Colorado 81505 - (970) 256-9297"; stone may be procured from this supplier or an Artist approved equal (samples must be provided). The concrete fabricator is responsible for the procurement and placement of all bolts as indicated in detail D4 on sheet 153.

VII. The Artist has met with the following area fabricators regarding this project:

- i. Precision Precast 4150 E Magnolia St, Phoenix, AZ 85034; (480)-619-0018 Attn: Tim Walter
- ii. Mesa Precast 415 S Price Rd, Tempe, AZ 85281; (480)-968-5400 Attn: Brad Buntrock
- iii. Magnum Companies 2439 S. 49th Avenue, Phoenix, AZ 85043; (602)-272-3600 Attn: Shane Altmeyer
- iv. Southwest Fabrication 22233 N. 23rd Ave. Phoenix, AZ 85027; (602)-721-5331 Attn: John Shipman

2. **103 AWARD AND EXECUTION OF CONTRACT,** Add the following to **Subsection 103.3 AWARD OF CONTRACT:**

Contract award will be made to a responsive and responsible bidder based on the low total base bid or on the low combination of the total base bid and any selected alternate(s), whichever is in the best interest of the City. If unit pricing is required in the proposal, the extensions and additions will be verified to assure correctness. Award will be based on the revised total if any errors are found. Additionally, the Contractor will meet the minimum SBE subcontracting goal set for this contract or have been granted a full or partial waiver of the goal. The City expressly reserves the right to cancel this agreement without recourse or prejudice to Contractor until all parties have executed the agreement in full.

Any bidder that currently contracts with the City must be in good standing for its proposal to be considered responsive. For the purpose of this Invitation to Bid, good standing means compliance with all contractual provisions, including payment of financial obligations.

3. **103 AWARD AND EXECUTION OF CONTRACT,** Add the following to **Subsection 103.5, REQUIREMENT OF CONTRACT BONDS:**

A. **PERFORMANCE BOND AND LABOR AND MATERIAL BOND**

Prior to the execution of a contract, the successful bidder must provide a performance bond and a labor

and material bond, each in an amount equal to the full amount of the contract. Each such bond will be executed by a surety company or companies holding a certificate of authority to transact surety business in the State of Arizona issued by the Director of the Department of Insurance. A copy of the Certificate of Authority will accompany the bonds. The Certificate will have been issued or updated within two years prior to the execution of the Contract. The bonds will be made payable and acceptable to the City of Phoenix. The bonds will be written or countersigned by an authorized representative of the surety who is either a resident of the State of Arizona or whose principal office is maintained in this state, as required by law, and the bonds will have attached thereto a certified copy of Power of Attorney of the signing official. If one Power of Attorney is submitted, it will be for twice the total contract amount. If two Powers of Attorney are submitted, each will be for the total contract amount. Personal or individual bonds are not acceptable. Failure to comply with these provisions will be cause for rejection of the bidder's proposal.

#### B. BONDING COMPANIES

All bonds submitted for this project will be provided by a company which has been rated "A- or better for the prior four quarters" by the A. M. Best Company. **Failure to provide an "A- or better for the prior four quarters" bond will result in bid rejection.**

4. 103 AWARD AND EXECUTION OF CONTRACT, Delete Subsection 103.6, CONTRACTOR'S INSURANCE in its entirety and substitute the following:

##### 103.6.1 General:

Contractor and subcontractors must procure insurance against claims that may arise from or relate to performance of the work hereunder by Contractor and its agents, representatives, employees and subconsultants. Contractor and subcontractors must maintain that insurance until all of their obligations have been discharged, including any warranty periods under this Contract.

These insurance requirements are minimum requirements for this Contract and in no way limit the indemnity covenants contained in this Contract.

The City in no way warrants that the minimum limits stated in this section are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this Contract by the Contractor, its agents, representatives, employees, or subcontractors. Contractor is free to purchase such additional insurance as may be determined necessary.

#### A. MINIMUM SCOPE AND LIMITS OF INSURANCE

Contractor must provide coverage with limits of liability not less than those stated below. An excess liability policy or umbrella liability policy may be used to meet the minimum liability requirements provided that the coverage is written on a "following form" basis:

##### 1. Commercial General Liability – Occurrence Form

Policy must include bodily injury, property damage, broad form contractual liability and XCU coverage.

General Aggregate/for this Project	\$2,000,000/1,000,000
Products – Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$1,000,000
Each Occurrence	\$1,000,000

a. The policy must be endorsed to include the following additional insured language: "The City of Phoenix is named as an additional insured with respect to liability arising out of the activities performed by, or on behalf of the Contractor, including completed operations".

2. **Automobile Liability**

Bodily injury and property damage coverage for any owned, hired, and non-owned vehicles used in the performance of this Contract.

Combined Single Limit (CSL)	\$1,000,000
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a. The policy must be endorsed to include the following additional insured language: "The City of Phoenix is named as an additional insured with respect to liability arising out of the activities performed by, or on behalf of the Contractor, including automobiles owned, leased, hired or borrowed by the Contractor".

3. **Worker's Compensation and Employers' Liability**

Workers' Compensation	Statutory
Employers' Liability	
Each Accident	\$100,000
Disease – Each Employee	\$100,000
Disease – Policy Limit	\$500,000

a. Policy must contain a waiver of subrogation against the City of Phoenix.

b. This requirement does not apply when a contractor or subcontractor is exempt under A.R.S. §23-902(E), **AND** when such contractor or subcontractor executes the appropriate sole proprietor waiver form.

4. **No Builders' Risk Insurance required.**

B. **ADDITIONAL INSURANCE REQUIREMENTS**

The policies must include, or be endorsed to include, the following provisions:

1. On insurance policies where the City of Phoenix is named as an additional insured, the City of Phoenix is an additional insured to the full limits of liability purchased by the Contractor even if those limits of liability are in excess of those required by this Contract.
2. The Contractor's insurance coverage must be primary insurance and non-contributory with respect to all other available sources.
3. With regard to general liability, the City of Phoenix is named as an additional insured for both products completed operations and premises operations.

C. **NOTICE OF CANCELTION**

For each insurance policy required by the insurance provisions of this Contract, the Contractor must provide to the City, within 2 business days of receipt, a notice if a policy is suspended, voided or cancelled for any reason. Such notice will be sent directly to the City of Phoenix Contract Specialist listed on Page I.B.-1 of these specifications and will be sent by certified mail, return receipt requested.

D. ACCEPTABILITY OF INSURERS

Insurance is to be placed with insurers duly licensed or authorized to do business in the state of Arizona and with an "A.M. Best" rating of not less than B+ VI. The City in no way warrants that the above-required minimum insurer rating is sufficient to protect the Contractor from potential insurer insolvency.

E. VERIFICATION OF COVERAGE

Contractor must furnish the City with certificates of insurance (ACORD form or equivalent approved by the City) as required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. *Any policy endorsements that restrict or limit coverage will be clearly noted on the certificate of insurance.*

All certificates and any required endorsements are to be received and approved by the City before work commences. Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the project. Failure to maintain the insurance policies as required by this Contract or to provide evidence of renewal is a material breach of contract.

All certificates required by this Contract must be sent directly to the City of Phoenix Contract Specialist listed on Page I.B. - 1 of these specifications. The City project/contract number and project description must be noted on the certificate of insurance. The City reserves the right to require complete, certified copies of all insurance policies required by this Contract at any time. **DO NOT SEND CERTIFICATES OF INSURANCE TO THE CITY'S RISK MANAGEMENT DIVISION.**

**If the Certificate of Insurance reflecting policy coverage and cancellation notice does not conform to the City's requirements, the contractor must:**

- **Submit a current insurance certificated (dated within 15 days of the payment request submittal) with each payment request form. The payment request will be rejected if the insurance certificate is not submitted with the payment request.**

F. SUBCONTRACTORS

Contractors' certificate(s) must include all subcontractors as additional insureds under its policies or subcontractors must maintain separate insurance as determined by the Contractor, however, subcontractor's limits of liability must not be less than \$1,000,000 per occurrence/\$2,000,000 aggregate.

G. APPROVAL

Any modification or variation from the insurance requirements in this Contract must be made by the Law Department, whose decision is final. Such action will not require a formal Contract amendment, but may be made by administrative action.

H. OFF-DUTY POLICE OFFICER REQUIREMENTS

**Off Duty Police Officer Requirements**

It is required that the City provide off-duty police officers for construction projects as defined in the most recent edition of the City of Phoenix Traffic Barricade Manual. The Engineer must competitively

procure Off Duty Police with vendors who are Authorized Traffic Coordinators with the City of Phoenix Police Department Off Duty Coordinator. The following requirements must be included in the procurement:

1. Hourly fees charged
2. Administrative fees (administrative fees to be charged as a part of the hourly rate, not billed separately)
  - a. Pay applications requesting reimbursement for Off Duty Police hours worked will be accompanied with itemized documentation indicating officer name, date worked, hours worked, time of day worked and location.
  - b. For audit purposes, contractor's files will contain documentation from the successful off duty vendor that the above items are accounted for in the vendor's price proposal.

3. Insurance Requirements:

- a. Commercial General Liability – Occurrence Form

Policy must include bodily injury, property damage and broad form contractual liability coverage.

General Aggregate	\$2,000,000
Products – Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$1,000,000
Each Occurrence	\$1,000,000

The policy must be endorsed to include the City of Phoenix as an additional insured with respect to liability arising out of the activities performed by, or on behalf of, the contract worker.

- b. Non-owned Auto Liability \$1,000,000

Coverage must be provided **if** a City of Phoenix Police vehicle is being used in the performance of the off-duty traffic control services.

The policy must be endorsed to include the City of Phoenix as an additional insured with respect to liability arising out of the use and operation of a City vehicle.

- c. Worker's Compensation and Employers' Liability

Workers' Compensation	Statutory
Employers' Liability	
Each Accident	\$100,000
Disease – Each Employee	\$100,000
Disease – Policy Limit	\$500,000

Policy must contain a waiver of subrogation against the City of Phoenix.

# I. **INSURANCE FOR CENTRAL AVENUE GUIDEWAY WORK**

Contractor shall comply with the insurance requirements set forth in attached Exhibit H for Central Avenue Guideway Work.

### 103.6.2 Indemnification of City Against Liability

Contractor agrees to indemnify, defend, save and hold harmless the City of Phoenix and its officers, agents and employees (and any jurisdiction or agency issuing permits for any work included in the project, and its officers, agents and employees), ("Indemnatee") from all claims, actions, liabilities, damages, losses or expenses, (including court costs, attorney's fees and costs of claim processing, investigation and litigation) ("Claims") caused or alleged to be caused, in whole or in part, by the wrongful, negligent or willful acts, or errors or omissions of Contractor or any of its owners, officers, directors, agents, employees, or subcontractors in connection with this Contract. This indemnity includes any Claim or amount arising out of or recovered under workers' compensation law or on account of the failure of Contractor to conform to any federal, state or local law, statute, ordinance, rule, regulation, or court decree. Contractor must indemnify Indemnatee from and against any and all Claims, except those arising solely from Indemnatee's own negligent or willful acts or omissions. Contractor is responsible for primary loss investigation, defense and judgment costs where this indemnification applies. In consideration of the City's award of this Contract, Contractor agrees to waive all rights of subrogation against Indemnatee for losses arising from or related to this Contract. The obligations of Contractor under this provision survive the termination or expiration of this Contract.

5. **104 SCOPE OF WORK**, Add the following to **Subsection 104.1.2 MAINTENANCE OF TRAFFIC**:

#### **ADA AND ANSI ACCESS OF PREMISES DURING CONSTRUCTION**

Contractor will maintain existing ADA and ANSI accessibility requirements during construction activities in an occupied building or facility. ADA and ANSI accessibility requirements will include, but not be limited to, parking, building access, entrances, exits, restrooms, areas of refuge, and emergency exit paths of travel. Contractor will be responsible for the coordination of all work to minimize disruption to building occupants and facilities.

#### **UTILITY PROVIDER ACCESS OF PREMISES DURING CONSTRUCTION**

Contractor shall maintain safe and adequate access during construction activities for utility providers along the Grand Canal including, but not limited to: APS, City of Phoenix, and SRP.

6. **104 SCOPE OF WORK**, Add the following to **Subsection 104.1.4 CLEANUP AND DUST CONTROL**:

The Contractor will use a power pick-up broom as part of the dust control effort. No separate measurement or payment will be made for cleanup or dust control, or for providing a power pick-up broom on the job.

7. **105 CONTROL OF WORK**, Add the following to **Subsection 105.1, AUTHORITY OF THE ENGINEER**:

#### **A. CONTRACT ADMINISTRATION**

The definition of "Engineer" will read as follows:

**"Engineer"**: All references to "Engineer" in these contract bid documents, including the MAG Specifications, will mean City Engineer.

#### **B. PRECONSTRUCTION CONFERENCE**

After completion of the contract documents, to include bonds, insurance and signatures and prior to the commencement of any work on the project, the Street Transportation Department, DCM Division, (telephone 602-495-2050), will schedule a Pre-Construction Conference. This will be held at 1034 East

Madison Street, Phoenix, Arizona.

Construction administration will be provided by City of Phoenix, Street Transportation Department, Design & Construction Management Division (DCM).

The purpose of this conference is to establish a working relationship between the Contractor, utility firms and various City agencies. The agenda will include critical elements of the work schedule, submittal schedule, cost breakdown of major lump sum items, payment application and processing, coordination with the involved utility firms, emergency telephone numbers for all representatives involved in the course of construction and establishment of the notice to proceed date. The Contractor will also provide copies of all purchase orders and/or contracts with SBE subcontractors and suppliers used to meet the subcontract goals programmed for this project.

Minimum attendance by the Contractor will be a responsible company/corporate official, who is authorized to execute and sign documents on behalf of the firm, the job superintendent and the Contractor's safety officer.

C. AUTHORIZATION OF THE ENGINEER

The City may, at its discretion and without cause, order the Contractor in writing to stop and suspend work. Immediately after receiving such notice, the Contractor will discontinue advancing the work specified under this Agreement.

Such suspension will not exceed one hundred and eighty (180) consecutive days during the duration of the project.

The Contractor may seek an adjustment of the contract price and time, if the cost or time to perform the work has been adversely impacted by any suspension or stoppage of work by the City.

8. **105 CONTROL OF WORK**, Add the following to **Subsection 105.2 PLANS AND SHOP DRAWINGS**:

The Contractor will submit as many of the required shop drawings and product data submittals at the Pre-Construction meeting as practical and possible. All shop drawings and product data submittals will be submitted sufficiently in advance to allow adequate time for City review(s) and approval. The Contractor will submit early enough to allow enough time for reviews based on the assumption that a submittal may be marked "Revise and Resubmit" or "Rejected", requiring the Contractor to modify the submittal and resubmit for additional review(s) until acceptance.

A separate transmittal will be used for each specific item type, class of material or equipment for which a submittal is required. Multiple items under one transmittal will only be allowed when the items taken together constitute a complete manufacturer's package, or are so functionally related that the entire package should be reviewed as a whole. The contractor will submit six (6) hard copies of each shop drawing for review. **Email or FAX submittals will not be accepted.**

The Contractor will allow up to four (4) weeks for City review for each submittal. Some submittals may be simple and straightforward and may not require the full four (4) weeks, but other more complex submittals may take the full four (4) weeks.

9. **105 CONTROL OF WORK**, Add the following to **Subsection 105.7 COOPERATION BETWEEN CONTRACTORS**



Other Contractors may to be working in or near the area of this contract. The Contractor will conduct his work as specified in MAG Section 105.7.

10. **105 CONTROL OF WORK**, Delete **Subsection 105.8 CONSTRUCTION STAKES, LINES AND GRADES** and substitute the following

### **Description**

The work under this section will consist of furnishing all materials, personnel and equipment necessary to perform all surveying, staking and verification of the accuracy of all points which have been provided by the Engineer.

Included in this work will be all calculations required for the satisfactory completion of the project in conformance with the plans and specifications. The work will be done under the direction of a registered professional surveyor employed by the Contractor.

Measurements of all removals and pay quantity items will be the responsibility of the Engineer.

When utility adjustments are a part of the contract, the Contractor will perform and be responsible for locating, tying and untying all manholes and valves that are discovered during the course of the contract. The Contractor will set all survey points, stakes and references necessary for carrying out all such adjustments.

The Contractor will furnish all traffic control, including flagging for survey and staking operations. Traffic control will be in accordance with the requirements of the City of Phoenix Barricade Manual.

The Contractor will keep field notes in bound field books. These books will be available for inspection by City personnel at all times and will become the property of the City of Phoenix upon completion of the project.

### **Construction Staking Requirements**

Staking will be performed in accordance with the City of Phoenix's Survey Section Standard Requirements for Staking, As-Builts and Quantity Calculations, plus any special addenda provided by the Engineer. The Contractor will provide to the Engineer in writing, for the Engineer's approval, any special procedures that will be used for construction survey staking completion.

The Engineer will provide control points for establishing an accurate construction centerline and will establish bench marks adjacent to this line for the proper layout of the work. Control points will be located on monument line and/or construction centerline at the beginning and ending points of the project. Control points will also be located on the appropriate centerline at all point of curve (PC), points of tangent (PT), and angle points. No less than three (3) bench marks will be provided; one (1) at the beginning of the project, one (1) at the midpoint, and one (1) at the end of the project. Additional bench marks may be provided at other convenient locations, but no more than one (1) additional bench mark will be provided for each 1,320 feet of the project length. Control points set by the Engineer will be identified in the field to the Contractor.

After the Contractor has verified the accuracy of the control points established by the City, the Contractor will set all stakes necessary for construction in accordance with the City of Phoenix Survey Section Standard Requirements.

If errors are discovered during the verification process and control points do not agree with the geometrics shown in the plans, the Contractor will promptly notify the Engineer in writing, and explain the problem in detail. The Engineer will advise the Contractor of any corrective actions which may be necessary.



The Contractor will exercise care in the preservation of stakes, references, bench marks and will reset them when they are damaged, lost, displaced or removed.

Any discrepancies in grade, alignment, locations or dimensions detected by the Contractor will be brought to the attention of the Engineer by letter. No changes in the project plans will be allowed without the approval of the Engineer.

The Engineer reserves the right to make inspections and random checks of any portion of the staking and layout procedure. If, in the Engineer's opinion, the work is not being performed in the manner that will assure proper control and accuracy, the Engineer will order any or all of the staking and layout work redone at no additional cost.

If any portion of the Contractor's staking and layout work is ordered redone, resulting in additional rechecking by the Engineer, the City will be reimbursed for all costs for such additional checking. The amount of such costs will be deducted from the Contractor's progress payment.

Inspection of the Contractor's layout by the Engineer and the acceptance of all or any part of it will not relieve the Contractor of their responsibility to secure the proper dimensions, grades and elevations for the work.

### **Record Drawings**

The Contractor will maintain a record set of plans at the job site. These will be kept legible and current and will show all changes or work added in a contrasting, reproducible color. Two weeks prior to issuance of substantial completion, the Contractor will submit, prior to final inspection, corrected landscape drawings showing the location of all utility services, controller, pipe, valves and wiring. The Engineer will be the sole judge as to the acceptability of the record plans and receipt of an acceptable set is a pre-requisite for final payment.

### **Measurement**

Construction surveying and layout will be measured as a single complete unit of work.

Two (2), three (3) and four (4) person survey party will be measured by the hour to the nearest half (1/2) hour.

### **Payment**

Payment for construction surveying and layout will be by the lump sum and will be made as follows:

The items of two (2), three (3) and four (4) person survey party are contingent items and are established for the purpose of compensating the Contractor for additional staking and layout required as a result of extra work ordered by the Engineer. Payment will be made at the predetermined unit price shown on the bidding schedule for the survey party or parties used. The Engineer will be the sole judge as to whether the additional work will be performed by the Contractor or by Department forces.

The amount per hour for a two (2) person, three (3) person or four (4) person survey party includes the cost of all work necessary to complete the extra work.

No payment will be made for the resetting of stakes, references, bench marks and other survey control.

11. **105 CONTROL OF WORK**, Add the following to **Subsection 105.15 ACCEPTANCE, paragraph (B) Final**

Acceptance:

A. SUBSTANTIAL COMPLETION

The work may be judged substantially complete when all construction has been completed with the possible exception of final inspection punch list work. The purpose of granting or acknowledging substantial completion is to stop contract time. This is particularly important to the Contractor if contract time is exhausted or nearly so and/or punch list work is anticipated to extend beyond the allotted time. Granting of substantial completion will eliminate the possibility of incurring liquidated damages or additional liquidated damages beyond the substantial completion date, whichever case may apply.

In the event that the Engineer grants substantial completion, the Contractor will have thirty (30) days thereafter to complete punch list work, unless additional time is granted--in writing--by the Engineer. In no case will a Contractor be granted more than thirty (30) days to complete punch list work, unless there are extenuating circumstances such as delay in shipment of a specialized piece of equipment, labor strike, or other circumstances beyond the Contractor's control which would necessitate a further time extension.

B. PENALTY FOR FAILURE TO COMPLETE PUNCH LIST WORK WITHIN SPECIFIED TIME

In the event the Contractor fails to complete the punch list work within thirty (30) days following the contract completion date, or in the case of specialized situations within the additional time allotted by the Engineer, the Contractor may be declared in default, and the Engineer may order the work completed by others.

In the event of default, as described herein, the Engineer will withhold from the Contractor's final payment, an amount equal to at least twice the estimated cost of the remaining work. In addition, the Engineer will withhold the retention deducted from contract progress payments until all punch list work has been satisfactorily completed, whereupon twice the amount of the actual cost of completing the work will be deducted from the Contractor's final payment and the remaining funds, if any, including the contract retention, will be released in accordance with the conditions set forth in contract retention.

C. CONTRACT RETENTION

This project will not be considered complete until all work has been completed, including punch list work. Under no circumstances will a Contractor receive any portion of the legally retained progress payments until the City has granted a final acceptance and/or acknowledged substantial completion. The following conditions will apply to each case:

1. Substantial Completion: The Engineer may reduce outstanding contract retention to not less than one (1) percent of the total contract amount, upon granting substantial completion, if the value of the punch list work is estimated to be less than one (1) percent of the total contract.
2. Project Acceptance: Project acceptance implies that all punch list work is done and the improvements have been accepted by the City. Under these conditions, the retention will be fully released to the Contractor subject only to the signing of the standard claims affidavit and hold harmless clause required for all contracts.
3. Final Release of Contract Retention and/or Release of More Than Ninety (90) Percent of the Contract Funds: Prior to final payment and release of monies retained and/or in the case of substantial completion where the Contractor has requested a reduction in contract retention, the

Contractor will be required to sign a claims affidavit agreeing to hold the City harmless from any and all claims arising out of the contract.

12. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Add the following to **Subsection 107.1, LAWS TO BE OBSERVED, paragraph (C):**

While every effort has been made to Blue Stake all known utilities, and to research and show on the plans, all existing underground utilities based on the best available information, it will be the Contractor's responsibility to locate and pothole all existing utilities sufficiently in advance of anticipated new underground construction to identify any potential conflicts and allow reasonable time for the Engineer to determine solutions. Any claims for additional compensation or work required due to the Contractor's non-compliance with this provision will not be considered for payment by the City.

13. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Add the following new paragraphs to **Subsection 107.1, LAWS TO BE OBSERVED:**

(G) FAIR TREATMENT OF WORKERS

The Contractor will keep fully informed of all Federal and State laws, County and City ordinances, regulations, codes and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any way affect the conduct of the work. He will at all times observe and comply with all such laws, ordinances, regulations, codes, orders and decrees; this includes, but is not limited to laws and regulations ensuring fair and equal treatment for all employees and against unfair employment practices, including OSHA and the Fair Labor Standards Act (FLSA). The Contractor will protect and indemnify the Contracting Agency and its representatives against any claim or liability arising from or based on the violation of such, whether by himself or his employees.

(H) DESERT TORTOISE MITIGATION

As stated in the Arizona Interagency Desert Tortoise Team (AIDTT) Management Plan (1996), if a desert tortoise is found in a project area, activities should be modified to avoid injuring or harming it. If activities cannot be modified, tortoises in harm's way should be moved in accordance with Arizona Game and Fish Department's "Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects", revised October 23, 2007 (or the latest revision), included in these contract provisions. Taking, possession, or harassment of a desert tortoise is prohibited by State law, unless specifically authorized by Arizona Game and Fish Department.

- (I) BURROWING OWLS MITIGATION – MIGRATORY BIRD TREATY ACT OF 1918

While no burrowing owls have been seen at the project site, small animal burrows likely used by rodents and cottontail rabbits are present. In the event that burrowing owls are found on the site, the project will comply with the Migratory Bird Treaty Act of 1918 and relocate the birds prior to grading. A contact for relocation of burrowing owls is Bob Fox or Greg Clark of Wild at Heart, 31840 North 45<sup>th</sup> Street, Cave Creek, AZ 85331, 480-595-5047.

14. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Add the following to **Subsection 107.2, PERMITS:**

1. HAUL PERMIT

On any project, when the quantity of fill or excavation to be hauled exceeds 10,000 C.Y. or when the

duration of the haul is for more than twenty (20) working days, the Contractor will:

- A. Obtain approval of the proposed haul route, number of trucks, etc., by the Street Transportation Department, and then;
- B. Submit the proposed haul route plan to the Planning and Development Department and pay the appropriate plan-review fee (contact Planning and Development Department at 602-534-5933 for current plan review fee, the cost of which will be considered incidental to the project), and after their approval;
- C. Obtain the written haul permit from the Planning and Development Department.

**NOTE:** Obtaining the haul permit and the approval by Street Transportation does not release the Contractor from strict compliance with MAG Subsection 108.5, Limitation of Operations.

## 2. **STORM WATER POLLUTION PREVENTION PLAN AND AZPDES PERMIT**

Any project that disturbs 1 acre or more of the ground surface requires the Contractor to obtain an AZPDES permit and prepare a SWPPP. This project does require an AZPDES permit and SWPPP.

## 3. **DUST PERMIT**

Any project that disturbs more than 1/10 acre of soil requires an earthmoving permit from Maricopa County. Information and forms can be found at:

[www.maricopa.gov/aq/divisions/permit\\_engineering/applications/Default.aspx](http://www.maricopa.gov/aq/divisions/permit_engineering/applications/Default.aspx)

To facilitate and encourage strict compliance with the Maricopa County Air Pollution Control Regulations pertaining to fugitive dust control, the Contractor will submit the following documentation to the Engineer at the Pre-Construction meeting prior to conducting any earth moving or dust generating activities under the Contract.

- a. Copy of a valid Maricopa County Earth Moving (Dust Control) Permit applicable to the work or services under the Contract.
- b. Copy of the Dust Control Plan applicable to the work or services under the Contract.
- c. Documentation that all of the Contractor's on-site project managers have received the Comprehensive or Basic dust control training as required by Maricopa County Rule 310 based on project disturbed acres.

For construction sites where 5-acres or more are disturbed, the Contractor will designate and identify to the City an individual who has completed the dust control training as required for the site Dust Control Coordinator. The Dust Control Coordinator will be present on-site all times that earth moving or dust generating activities are occurring and until all ground surfaces at the site have been stabilized.

For construction sites less than 1-acre, the Contractor will designate an individual who has completed Basic Training to be on site at all times that earth moving or dust generating activities are occurring.

The Contractor will notify the Engineer within twenty-four (24) hours of any inspection, Notice of Violation, or other contact by the Maricopa County Air Quality Department with it or any of its

subcontractors regarding the work or services under the Contract. A copy of any written communications, notices or citations issued to Contractor or any of its subcontractors regarding the work or services under the Contract will likewise be transmitted to the Engineer within twenty-four (24) hours.

The Contractor will prevent any dust nuisance due to construction operations in accordance with MAG Specifications, Section 104.1.3, Cleanup and Dust Control. The Contractor will use a power pick-up broom as part of the dust control effort. No separate measurement or payment will be made for cleanup or dust control, or for providing a power pick-up broom on the job.

The Contractor agrees to indemnify and reimburse the City for any fine, penalty, fee or monetary sanction imposed on the City by Maricopa County arising out of, or caused by the performance of work or services under the Contract. The Contractor will remit payment of the reimbursable sum to the City within thirty (30) days of being presented with a demand for payment from the City.

**5. TEMPORARY RESTRICTION AND CLOSURE SYSTEM (TRACS) PERMIT**

The Contractor will obtain a TRACS permit for any construction that restricts access (partial or complete closures) on Major/Collector public streets, or complete closures on Local streets, sidewalks, bike lanes and alleys. The Contractor will obtain this permit in accordance with the City of Phoenix Traffic Barricade Manual, latest edition. The Contractor will follow all requirements of the TRACS permit during construction. The Contractor will obtain this permit before the Notice to Proceed date. Any construction delays caused by non-compliance with the TRACS permit or the City of Phoenix Traffic Barricade Manual requirements will be the responsibility of the Contractor.

**6. DEMINIMUS DISCHARGE PERMIT**

As required, if the Contractor anticipates the discharge of any amount of water from the City water or wastewater system during construction, the Contractor will be responsible for obtaining a DeMinimus Permit from the Arizona Department of Environmental Quality (ADEQ) for any discharge that will reach "waters of the U.S.", either directly or indirectly, and complying with all requirements of that permit. This includes all compliance reporting required by the permit. No separate payment will be made for obtaining or complying with this permit.

**7. SALT RIVER PROJECT CONSTRUCTION CLEARANCE AGREEMENT**

The Contractor shall execute a construction clearance agreement with Salt River Project (SRP) prior to performing any work within SRP's right-of-way. A blank copy of the "Construction Clearance Agreement" is provided. The Contractor shall read and abide by the terms and conditions of this agreement when working on or near SRP facilities.

**8. VALLEY METRO RED TAG PERMIT**

The contractor shall attend track access classes prior to initiating construction of the Central Avenue guideway work. Track access classes are offered the first Monday of every month at 2:00 pm, except on holidays, in which they will be held on the second Monday of the month. Classes are conducted at the Valley Metro Operations & Maintenance Center located at 605 South 48<sup>th</sup> St, Phoenix, AZ 85034. Contractor shall contact Mike Zang ([mzang@valleymetro.org](mailto:mzang@valleymetro.org) – 602-652-5060) in advance to confirm the number to be in attendance on a specific date. Details regarding the red tag permit will be provided during the track access class. The permit will be provided to the contractor at no cost following attendance at the track access class.

8. **OTHER PERMITS**

The Contractor may be required to obtain other permits from other agencies, such as the Arizona Department of Transportation (ADOT) or the Flood Control District of Maricopa County (FCDMC) before beginning work or restricting traffic in their right-of-way. The Contractor will be required to obtain these permits and comply with their requirements.

15. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Revise the title of **Subsection 107.4 ARCHAEOLOGICAL REPORTS** to **107.4 ARCHAEOLOGICAL MONITORING AND DISCOVERIES**, and add the following:

Archaeological monitoring will be conducted within the limits of the project during construction. The Contractor will coordinate all ground disturbing work with the archaeologist(s) and provide a current work schedule to facilitate the archaeologist's investigation and monitoring of all ground disturbing work within the area(s) of interest. When archaeological materials are discovered, the Contractor will stop work immediately within a 10-meter zone of the discovery, secure the area, and immediately notify the on-site archaeologist(s) who will then contact the City Archaeology Office (602-495-0901). The Contractor will not recommence work in the area of discovery until directed in writing by the City Archaeology Office.

If suspected archaeological materials are discovered during construction without an archaeologist present, the Contractor will stop work immediately within a 10-meter zone of the discovery, secure the area, and immediately notify the City Archaeology Office (602-495-0901). The Contractor will not recommence work in the area of discovery until directed in writing by the City Archaeology Office.

16. Add the following to **MAG Subsection 107.5, SAFETY, HEALTH AND SANITATION PROVISIONS**:

a. **ARSENIC**

The Contractor shall inform all parties responsible for potentially exposed workers to disturbed soils along the canal banks that exposure to inorganic arsenic may occur during construction activities involving significant soil disturbance. Potentially exposed workers shall be provided a copy of Attachment 1, EXAMPLE OF OCCUPATIONAL HEALTH HANDOUT TO CONSTRUCTION WORKER – ARSENIC.

16. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Modify **Subsection 107.8, USE OF EXPLOSIVES** as follows:

Replace the words "Uniform Fire Code" with "Phoenix Fire Code".

17. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Add the following to **Subsection 107.11, CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES**:

A. **UNDERGROUND FACILITIES**

The Contractor will make whatever investigation it deems necessary to verify the location of underground utility facilities. If such facilities are not in the location shown in the drawings, then (regardless of whether this is discovered prior to or during construction) the contractor's remedies, if any, pursuant to Art. 6.3, Chapter 2, Title 40, A.R.S. (A.R.S. 40-360.21 through 40-360.32, "Underground Facilities"), will be the contractor's sole remedy for extra work, delays and disruption of the job, or any other claim based on the location of utility facilities. Locations of utility facilities shown on

drawings furnished by the City are to be regarded as preliminary information only, subject to further investigation by the contractor. The City does not warrant the accuracy of these locations, and the contractor, by entering into this contract, expressly waives and disclaims any claim or action against the City under any theory for damages resulting from location of utility facilities.

The Contractor will be responsible for obtaining all Blue Stake utility location information, and for performing all requirements as prescribed in A.R.S. 40-360.21 through .29, for all underground facilities, including those that have been installed on the current project, until the project is accepted by the City.

At least two (2) working days prior to commencing any excavation, the Contractor will call the BLUE STAKE CENTER, between the hours of 7:00 a.m. and 4:30 p.m., Monday through Friday for information relative to the location of buried utilities. The number to be called is as follows:

Maricopa County (602) 263-1100

**B. UTILITY-RELATED CONSTRUCTION DELAY DAMAGES CLAIM PROCEDURES**

The following procedure is intended to provide a fair and impartial process for the settlement of construction delay claims associated with unknown or improperly located utility facilities.

The Contractor will immediately notify, in writing, the Project Engineer of any potential utility-related delay claim.

The Contractor will immediately notify the appropriate liaison of the affected utility verbally, followed by a written notification.

The Contractor will coordinate an investigation of the situation with the affected utility and the City's Utility Coordinator. After resolution, the Contractor will provide written notification of the settlement of the claim to all affected parties. If the affected utility makes a decision to handle negotiations for a claim, their personnel will be responsible for monitoring the project and all negotiations with the Contractor regarding the claim.

The Contractor will determine to document requirements of the affected utility for their acceptance of responsibility for the claims. The Contractor will provide four (4) copies of the required documentation to the utility involved and two (2) copies of this documentation to the Project Engineer. The Contractor will obtain written confirmation from the utility company involved of their documentation requirements.

**C. ARIZONA PUBLIC SERVICE CLEARANCES**

The Contractor shall meet with Arizona Public Service (APS) Leader Public Safety, Randy Boles, prior to any construction activities to review safety requirements related to APS utility poles. The Contractor shall maintain clearance from Arizona Public Service facilities in accordance with APS Company T&D Construction Standards 1124 and 1136, found on pages APS-1, APS-2, APS-3 and APS-4. No additional compensation will be made for compliance with these clearance requirements.

**18. 108 COMMENCEMENT, PROSECUTION AND PROGRESS Add the following to Subsection 108.2, SUBLETTING OF CONTRACT:**

**(F) PROMPT PAYMENT**

**1. Contractor Payment to Subcontractor or Supplier**



Contractor will pay its subcontractors or suppliers within seven (7) calendar days of receipt of each progress payment from the City. The Contractor will pay for the amount of work performed or materials supplied by each subcontractor or supplier as accepted and approved by the City with each progress payment. In addition, any reduction of retention by the City to the Contractor will result in a corresponding reduction to subcontractors or suppliers who have performed satisfactory work. Contractor will pay subcontractors or suppliers the reduced retention within fourteen (14) days of the payment of the reduction of the retention to the Contractor. No Contract between the Contractor and his subcontractors and suppliers may materially alter the rights of any subcontractor or supplier to receive prompt payment and retention reduction as provided herein. If the Contractor fails to make payments in accordance with these provisions, the City may take any one or more of the following actions and Contractor agrees that the City may take such actions: (1) to hold the Contractor in default under this agreement; (2) withhold future payments including retention until proper payment has been made to subcontractors or suppliers in accordance with these provisions; (3) reject all future bids from the Contractor for a period not to exceed one year from substantial completion date of this project; or (4) terminate agreement.

**2. Alternative Dispute Resolution Between Contractor and Subcontractor or Supplier**

If Contractor's payment to a subcontractor or supplier is in dispute, Contractor and subcontractor or supplier agree to submit the dispute to any one of the following dispute resolution processes within fourteen (14) calendar days from the date that any party involved gives written notice to the other party(ies): (1) binding arbitration; (2) a form of alternative dispute resolution (ADR) agreeable to all parties; or (3) a City of Phoenix facilitated mediation. When disputed claim is resolved through ADR or otherwise, the Contractor and subcontractor or supplier agree to implement the resolution within seven (7) calendar days from the resolution date.

**3. Inspection and Audit**

Contractor, its subcontractors and suppliers will comply with A.R.S. 35-214 and the City will have all rights and remedies to inspect and audit the records and files of Contractor, subcontractor or supplier, as afforded the State of Arizona in accordance with the provisions of A.R.S. Section 35-214.

**4. Non-Waiver**

Should the City fail or delay in exercising or enforcing any right, power, privilege, or remedy under this Section, such failure or delay will not be deemed a waiver, release, or modification of the requirements of this Section or of any of the terms or provisions thereof.

**5. Inclusion of provisions in Subcontracts**

Contractor will include these prompt payment provisions in every subcontract, including procurement of materials and leases of equipment for this Agreement.

**6. No Third Party Benefits or Rights**

Nothing contained in this Agreement is intended to benefit or confer any rights on any person or entity not a party to this Agreement, and no such person or entity, including but not limited to other Contractors, subcontractors or suppliers, may assert any claim, cause of action, or remedy against the City hereunder.



19. **108 COMMENCEMENT, PROSECUTION AND PROGRESS**, Add the following to **Subsection 108.4, CONTRACTOR'S CONSTRUCTION SCHEDULE**:

No later than one (1) week after the Pre-Construction meeting (or one week after the Notice to Proceed date is firmly established), the Contractor will submit to the Engineer, two (2) copies of a detailed Critical Path Model (CPM) chart outlining the detailed progress of all major and critical elements of the project by weeks, from beginning of project to end. The chart will begin at the established Notice to Proceed date and progress on a calendar basis, week by week, to the end of the project.

The Contractor will submit updated CPM charts as required by the Engineer. This will typically be on a monthly basis. The required submittals of updated CPM charts may be less frequent than monthly, if approved by the Engineer.

Neither the City nor the Engineer will accept liability or responsibility for the reasonable or workable nature of the CPM schedules prepared and submitted by the Contractor—that responsibility will remain with the Contractor.

20. **108 COMMENCEMENT, PROSECUTION AND PROGRESS**, Add the following to **Subsection 108.5, LIMITATION OF OPERATIONS**:

**A. WORK HOURS**

Regular working hours will be defined as one 8-1/2 hour shift per day, Monday through Friday, exclusive of City holidays.

Work in excess of regular working hours will be defined as overtime. For overtime which becomes necessary, the Contractor will make a written request to the Engineer at least eight (8) calendar days before the desired overtime. The request will include the duration, dates, times, reason for overtime, and a statement of the consequences if overtime is not approved.

The Contractor will not schedule any overtime work which requires inspection, survey, or material testing without written permission from the Engineer two (2) working days before the proposed overtime work. The Engineer reserves the right to deny the requested overtime. If an overtime request is denied, the Engineer may extend the contract time at no additional cost to the City, including extended overhead costs.

**Unscheduled Overtime**

Overtime that is not requested and approved in accordance with the above procedure will be defined as unscheduled overtime. All costs (including appropriate overhead) will be paid by the Contractor by deduction from the contract.

**Emergency Overtime**

An emergency is defined as work required for a situation that is not within the Contractor's control.

With the Engineer's approval, the Contractor will be permitted to work overtime without being responsible for paying the City's costs.

**B. NIGHT WORK**

Night work will be done in accordance with all City of Phoenix Ordinances.

The Contractor will submit a comprehensive plan at the Preconstruction Conference that details the steps and methods of noise reduction during night working hours. This plan will address, but not be limited to the following: back-up alarms, equipment noise, scheduling of excessively noisy construction phases, and material delivery times. Spotters, in lieu of back-up alarms, may be required at night.

There will be no separate measurement or payment for work related to this item, the cost being considered incidental to the cost of contract items.

**C. WORK HOURS AT CENTRAL AVENUE GUIDEWAY**

Working hours for the Valley Metro Light Rail guideway work at Central Avenue shall be between 1:15 am to 3:45 am Sunday night through Thursday night.

**21. 108 COMMENCEMENT, PROSECUTION AND PROGRESS, Add the following to Subsection 108.10, FORFEITURE AND DEFAULT OF CONTRACT:**

**City's Right to Perform and Terminate for Cause**

If the City provides the Contractor with a written order to provide adequate maintenance of traffic, adequate cleanup, adequate dust control or to correct deficiencies or damage resulting from abnormal weather conditions, and the Contractor fails to comply in a time frame specified, the City may have work accomplished by other sources at the Contractor's expense.

If Contractor persistently fails to (i) provide a sufficient number of skilled workers, (ii) supply the materials required by the Contract Documents, (iii) comply with applicable Legal Requirements, (iv) timely pay, without cause, Sub-consultants and/or Subcontractors, (v) prosecute the Contract Services with promptness and diligence to ensure that the Contract Services are completed by the Contract Time, as such times may be adjusted, or (vi) perform material obligations under the Contract Documents, then the City, in addition to any other rights and remedies provided in the Contract Documents or by law, will have the rights set forth below.

Upon the occurrence of an event set forth above, City may provide written notice to Contractor that it intends to terminate the Agreement unless the problem cited is cured, or commenced to be cured, within seven (7) days of Contractor's receipt of such notice.

If Contractor fails to cure, or reasonably commence to cure, such problem, then City may give a second written notice to Contractor of its intent to terminate within an additional seven (7) day period.

If Contractor, within such second seven (7) day period, fails to cure, or reasonably commence to cure, such problem, then the City may declare the Agreement terminated for default by providing written notice to Contractor of such declaration.

Upon declaring the Agreement terminated pursuant to the above, City may enter upon the premises and take possession, for the purpose of completing the Work, of all materials, equipment, scaffolds, tools, appliances and other items thereon, which have been purchased or provided for the performance of the Work, all of which Contractor hereby transfers, assigns and sets over to City for such purpose, and to employ any person or persons to complete the Work and provide all of the required labor, services, materials, equipment and other items.

In the event of such termination, Contractor will not be entitled to receive any further payments under the

Contract Documents until the Work will be finally completed in accordance with the Contract Documents. At such time, the Contractor will only be entitled to be paid for Work performed and accepted by the City prior to its default.

If City's cost and expense of completing the Work exceeds the unpaid balance of the Contract Price, then Contractor will be obligated to pay the difference to City. Such costs and expense will include not only the cost of completing the Work, but also losses, damages, costs and expense, including attorneys' fees and expenses, incurred by the City in connection with the re-procurement and defense of claims arising from Contractor's default.

22. **108 COMMENCEMENT, PROSECUTION AND PROGRESS**, Add the following to **Subsection 108.11, TERMINATION OF CONTRACT**:

**TERMINATION FOR CONVENIENCE**

The Owner for its own convenience has the right for any reason and at any time to terminate the contract and require the Contractor to cease work hereunder. Such termination will be effective at the time and in the manner specified in the notification to the Contractor of the termination. Such termination will be without prejudice to any claims which the Owner may have against the Contractor. In the event of a termination for convenience, the Contractor will be paid only the direct value of its completed work and materials supplied as of the date of termination, and Contractor will not be entitled to anticipated profit or anticipated overhead or any other claimed damages from the Owner, Architect or the Engineer.

If the City is found to have improperly terminated the Agreement for cause or default, the termination will be converted to a termination for convenience in accordance with the provisions of this Agreement.

**CANCELLATION OF CONTRACT FOR CONFLICT OF INTEREST**

All parties hereto acknowledge that this agreement is subject to cancellation by the City of Phoenix pursuant to the provisions of Section 38-511, Arizona Revised Statutes.

23. **109 MEASUREMENTS AND PAYMENTS** Add the following to **Subsection 109.2, SCOPE OF PAYMENT**:

**A. PARTIAL PAYMENTS**

The contracting agency will make a partial payment to the Contractor on the basis of an approved estimate prepared by the Engineer or the Contractor for work completed and accepted through the preceding month. The notice to proceed date, which is designated for the specific project involved, will be used as the closing date of each partial pay period. Payment will be made no later than fourteen (14) days after the work is certified and approved. City will review payment requests and make recommendation of approval or denial within seven (7) calendar days.

**B. PAYMENT RETENTION**

At the start of construction, ten percent of all pay requests will be retained by the City to guarantee complete performance of the contract. When the work is fifty percent complete, this amount may be reduced to five percent providing that construction progress and quality of work is acceptable to the City. Any funds which are withheld from the contractor will be paid no later than sixty days after completion of the contract and settlement of all claims.

In lieu of retention, the contractor may provide as a substitute, an assignment of time certificates of

deposit (CDs) from a bank licensed by Arizona, securities guaranteed by the United States, securities of the United States, the State of Arizona, Arizona counties, Arizona municipalities, Arizona school districts, or shares of savings and loan institutions authorized to transact business in Arizona.

Securities deposited in lieu of retention must be deposited into a separate account with a bank having a branch located in the City of Phoenix and be assigned exclusively for the benefit of the City of Phoenix pursuant to the City's form of escrow agreement

CDs assigned to the City must be maintained in the form of time deposit receipt accounts. CDs will be assigned exclusively for the benefit of the City of Phoenix pursuant to the City's form of escrow agreement.

Escrow Agreement forms may be obtained from the Contract Specialist assigned to the project.

24. **109 MEASUREMENTS AND PAYMENTS**, Add the following to **Subsection 109.4.3, DUE TO EXTRA WORK**:

**ALLOWANCE FOR EXTRA WORK**

Contract allowance items are provided for the purpose of encumbering funds to cover the costs of possible change order work. The amount of the allowance item is determined by the Engineer and is not subject to individual bid pricing. All bidders will incorporate the amount pre-entered in the bid proposal and will reflect the same in the total amount bid for this project.

This allowance item provides an estimated funding to cover unforeseen changes that may be encountered and corresponding extra work needed to complete the contract per plan. Unforeseen extra work, if any, will be as approved by the Engineer; for example, extension of unit bid prices, negotiated price or time and material, in accordance with MAG Specification Section 109.4 and 109.5.

It will be understood that this allowance item is an estimate only and is based on change order history of similar projects. It will not be utilized without an approved contract change order. It is further understood that authorized extra work, if any, may be less than the allowance item.

25. **109 MEASUREMENTS AND PAYMENTS**, Add the following to **Subsection 109.4 COMPENSATION FOR ALTERATION OF WORK**:

**109.4.7 CHANGE ORDERS**

Owner reserves the right to decrease adjustments made in any change order if, upon audit of Contractor's records, the audit discloses contractor provided false or inaccurate cost and pricing data in negotiating the change order. In enforcing this provision, the parties will follow the procedure provided in the Federal Acquisition Regulation (FAR) clause 52.214-27, found in 48 CFR Part 52.

26. **109 MEASUREMENTS AND PAYMENTS**, Delete Table 109-1 in **Subsection 109.9, DOLLAR VALUE OF MAJOR ITEM**, and substitute the following:

**CONTRACT AMOUNT**

Up to \$1 million

**MAJOR ITEM IS DEFINED AS ANY ITEM EQUAL TO OR GREATER THAN THE FOLLOWING**

\$15,000 or 3%, whichever is greater

<u>CONTRACT AMOUNT</u>	<u>MAJOR ITEM IS DEFINED AS ANY ITEM EQUAL TO OR GREATER THAN THE FOLLOWING</u>
\$1 million to \$3 million	3% of the original contract amount to a maximum of \$75,000.00
\$3 million to \$5 million	2.5% of the original contract amount to a maximum of \$90,000.00
Over \$5 million	1.5% of the original contract amount to a maximum of \$125,000.00

#### CONTINGENCY ITEMS

Contingency items which fall under the definition of a major item are subject to negotiation if decreased by more than twenty (20) percent.

Contingency items will not increase more than twenty (20) percent without being subject to renegotiation, regardless of the percentage of that item relative to the total contract amount.

27. 110 NOTIFICATION OF CHANGED CONDITIONS AND DISPUTE RESOLUTION Add the following to Subsection 110.1 GENERAL:

#### **SOILS INFORMATION**

The material boring logs shown on the plans or included in these specifications are included for the Contractor's convenience only. It is not intended to imply that the character of materials shown in the logs is representative throughout the project. **The soil borings are indicative of the soil characteristics only at the location and to the depth of each of the borings.**

Even if not specifically shown in the geotechnical information provided, the Contractor may encounter large cobbles, boulders, caliche, conglomerate, hard rock, perched groundwater, historic or prehistoric cultural resources, or other differing site conditions on this project. **No additional compensation will be made for any differing site condition that may be encountered.**

## **SPECIAL PROVISIONS**

1. Add the following new Section, **232 STORM WATER POLLUTION PREVENTION – BEST MANAGEMENT PRACTICES:**

### **Description**

Implementation of "Best Management Practices" (B.M.P.'s) to reduce stormwater pollution will be undertaken by the Contractor on a multi-tiered, most cost-effective approach. The Contractor will utilize the lowest-cost acceptable B.M.P. available to address each type of potential stormwater pollution situation encountered on the project. Should this prove ineffective in resolving the stormwater pollution problem, additional, higher-cost B.M.P.'s may need to be employed, upon approval by the City.

### **Construction Requirements**

Typical multi-tiered B.M.P. approaches to construction operations may include:

#### **A. ROADWAY SUBGRADE EXCAVATION:**

1. Tier I - The excavated area will create, in effect, a temporary retention area. This may provide adequate control of storm runoff to prevent sediment from leaving the site. Pumping or other methods utilized to drain the excavation will employ filter fabric or other filtering method to remove sediment before leaving the site or entering the storm drain system.
2. Tier II - Catch basin inlet protection (utilizing filter fabric, gravel, etc.) may be necessary should Tier I controls prove inadequate. Care will be exercised to ensure that Tier II B.M.P.'s do not result in blockage of drainage and resultant flooding of adjacent properties.

#### **B. OPEN PIPELINE TRENCHES:**

1. Tier I - The open trench itself will act as a temporary retention area. The Contractor will provide a low-cost, readily-installed/removed temporary device on the open end of the pipe to prevent sediment-laden stormwater from entering the pipe. This may consist of a temporary "plug" incorporating filter fabric, a temporary weir, or other device capable of removing sediment before allowing stormwater to enter the pipe. Care must be taken to prevent damming of floodwaters in the excavation that could result in "floating" the pipe.
2. Tier II - If Tier I protection does not prove satisfactory, the Contractor may need to install straw bales, sandbag berms, or temporary diversion dikes around the perimeter of the open excavation to prevent sediment-laden stormwater from entering the open excavation. Due to installation/removal time, such devices need only be installed during periods of likely precipitation and runoff. Earthen dikes are the preferred alternate, due to ease of installation and removal. Care must be taken to assure that runoff is not blocked to the extent that flooding of adjacent properties will result.

#### **C. BACKFILLED PIPELINE TRENCHES:**

1. Tier I - As with roadway subgrade excavations, pipeline trenches which have been backfilled but not yet paved will be several inches lower than adjacent pavement areas, and will

therefore act as temporary retention areas.

2. Tier II - If the "retention" provided by the backfilled area does not prevent sediment-laden runoff from leaving the excavated area, perimeter controls such as silt fence, straw bales, sandbag berms, or gravel filter berms may need to be installed around the downstream edge(s) of the backfilled area. As with open trenches, the selection of the appropriate measure, extent of its application, and time period during which it is needed will be dependent upon cost, site conditions, ease of installation/removal, and likelihood of precipitation/runoff. Again, care must be taken to ensure that diversion of stormwater onto adjacent properties does not result from these installations.

Another stormwater control method, which the Contractor may need to consider, is limiting the amount of area disrupted and therefore subject to sediment-laden stormwater runoff at any one time. Should such project phasing prove necessary due to the failure of other B.M.P.'s, the Contractor will revise his construction activities accordingly, at no additional cost to the City.

Standards for installation of the above B.M.P.'s are provided in the Flood Control District of Maricopa County's "Drainage Design Manual for Maricopa County, Arizona, Volume III, Erosion Control". Installation and operation of B.M.P.'s will be in accordance with that manual.

There will be no separate measurement or payment for preparing or developing Storm Water Pollution Prevention Plans, or for preparing NOI's or NOT's or obtaining an AZPDES Permit, all these costs being considered incidental to the cost of the project.

Use of individual BMP items will conform to the Contractor's approved Storm Water Pollution Prevention Plan (SWPPP).

### **Measurement and Payment**

This project includes a pay item "ALLOWANCE FOR STORMWATER POLLUTION PREVENTION BEST MANAGEMENT PRACTICE (BMP'S)". The amount of this allowance is determined by the Engineer, and is not subject to individual bid pricing. All bidders will incorporate the amount pre-entered in the bid proposal and will reflect the same in the total amount bid for this project.

Payment for various types of necessary BMP's will be made from this allowance based on approved invoiced cost of the materials only, plus taxes, and a maximum 15 percent markup for overhead and profit. There will be no separate measurement or payment for the preparation or development of the Storm Water Pollution Prevention Plan; labor or equipment necessary to install, maintain or remove the BMP materials; moving existing BMP materials from one location to another on the same project; or constructing BMP swales or berms, all of these costs being considered incidental to the cost of the project.

2. **301 SUBGRADE PREPARATION:** Add the following to **Subsection 301.1, DESCRIPTION:**

The work under Subgrade Preparation includes use of excavated material from pathway construction to be used as fill material for embankment.

3. **301 SUBGRADE PREPARATION,** Delete **Subsections 301.7, MEASUREMENT, and 301.8, PAYMENT,** and substitute the following:

#### **301.7 MEASUREMENT:**



Measurement for subgrade preparation shall be made by the square yard of the pathway and sidewalk pavement areas excavated and graded and subsequently covered with pavement materials. Payment for necessary grading for items outside of the edge of pathway and sidewalk shall be considered included in this item.

#### **301.8 PAYMENT**

Payment will be made at the unit price quoted in the bid proposal for the bid item "SUBGRADE PREPARATION". Payment shall be compensation in full for stripping, scarifying, grading, excavating, hauling, filling, compacting, and disposing of excess or unsuitable materials, together with all costs incidental thereto.

4. **340 CONCRETE CURB, GUTTER, SIDEWALK RAMPS, DRIVEWAY AND ALLEY ENTRANCE**, Add the following to **Subsection 340.2.1 Detectable Warnings; Subsection 340.3.1 Detectable Warnings; Subsection 340.5 MEASUREMENT; and Subsection 340.6 PAYMENT**:

Add the following to **MAG Subsection 340.2.1 Detectable Warnings**:

Detectable warning material will meet the latest ADA requirements and be cast iron with natural finish. Approved detectable warning material manufacturers include:

- a. Neenah Foundry
- b. Deter Foundry
- c. US Foundry

Add the following to **MAG Subsection 340.3.1 Detectable Warnings**:

Detectable warning plates will be installed per manufacturer's recommended specifications. The layout of plates will be determined by the Contractor, and if necessary, pre-cut as needed prior to beginning the installation process. Plates will not be cut to less than half their size. Plates will be cut as recommended by the manufacturer.

Add the following to **Subsection 340. 5 MEASUREMENT and 340.6 PAYMENT**:

#### **Driveway Entrance and Sidewalk Ramps Measurement and Payment**

Concrete sidewalks, driveways, curbs, and gutters will be measured to the nearest square foot complete in place.

Sidewalk ramps shall be constructed in accordance with Phoenix Standard Details or special details called out on the plans.

Payment will be made under the bid items for "SIDEWALK" and "DRIVEWAY ENTRANCE" and shall include all cost for forming and finishing. The cost of the curb and gutter within the sidewalk ramp and driveway areas will be measured and paid for under the bid items for "SIDEWALK" and "DRIVEWAY ENTRANCE". The cost of the special curb at the back of sidewalk ramps shall also be measured and paid for as "SIDEWALK".

Measurement and payment for this work shall be made per square foot complete and in place for the appropriate pay item for "SIDEWALK" or "DRIVEWAY ENTRANCE".

Measurement and payment for installation of truncated domes will be made per square foot complete and in place for the pay item "TRUNCATED DOMES FOR SIDEWALK RAMPS".

Add the following new Subsection, **MAG Subsection 340.3.11 Sandblast Street Names:**

Street names will be sandblasted into the concrete sidewalk per the plans. Payment for sandblasting street names will be made under the bid item for "ART WORK".

5. Add the following to **MAG Subsection 340.3 CONSTRUCTION METHODS:**

#### **Stray Current Testing**

Prior to initiating construction of the Central Avenue guideway work the contractor shall conduct stray current testing. Testing shall be conducted by Corrpro ([ssingh@corrpro.com](mailto:ssingh@corrpro.com) – 562-944-1636) or an approved testing provider. Test results shall be provided to Rick White at Valley Metro ([rwhite@valleymetro.org](mailto:rwhite@valleymetro.org) – 602-652-5084) to establish a base. Following guideway work the contractor shall conduct testing and provide test results to Valley Metro. No separate measurement or payment will be made for this testing and coordination.

6. **350 REMOVAL OF EXISTING IMPROVEMENTS** Add the following to **MAG Subsection 350.3 MISCELLANEOUS REMOVAL AND OTHER WORK:**

- A. **Remove and Relocate Existing Traffic Sign**
- B. **Remove and Reset Safety Post/Bollard**

These items include furnishing all labor, material, tools and equipment to complete the removal and reinstallation of items as specified on the plans, listed in MAG Section 350 and City of Phoenix Supplement thereto and other work of a minor nature which may develop during course of construction.

Payment for removal and relocate/reinstall/reset of items shall be full compensation for the items complete, including removal, relocation, reinstallation, and reset of foundations, excavation, and backfill, and other items of work incidental to complete the work.

8. Add the following new **Section 363 PEDESTRIAN LIGHTING INSTALLATION** as follows:

#### **363 PEDESTRIAN LIGHTING INSTALLATION**

##### **Description**

The Contractor will furnish and install the pedestrian lighting system, complete and in place including conduit, conductors and bond wires in accordance with the plans.

The Contractor will submit shop drawings for review and approval by the Engineer on all pedestrian light equipment to be provided by the Contractor.

The Contractor will coordinate pedestrian light equipment installation efforts to avoid any damage to other elements of project construction, and will provide a complete, connected system installation ready for the Power Company to energize the pedestrian light system.

### **Measurement and Payment**

Measurement will be per each complete pedestrian light installed, and payment will be at the unit price bid per each for "FURNISH AND INSTALL LED POLE MOUNTED AREA LIGHT, 12' MOUNTING"; "FURNISH AND INSTALL LED POLE MOUNTED AREA LIGHT, 15' MOUNTING"; "FURNISH AND INSTALL CONCRETE BOLLARD WITH LED LIGHT AND FOUNDATION"; "FURNISH AND INSTALL LED ACCENT LIGHT"; "FURNISH AND INSTALL CONDUCTORS AND BOND WIRES"; "FURNISH AND INSTALL CONDUIT"; "JUNCTION BOX"; "BORING FOR CONDUIT"; and "ELECTRICAL POWER SERVICE PEDESTAL CABINET" and will be compensation in full for all labor, equipment and materials necessary for the satisfactory installation of pedestrian light equipment, including furnishing and installing pedestrian light poles, luminaire arms, luminaires, photocells, and all other related equipment items in accordance with the plans, Standard Specifications and these Special Provisions.

9. **401 TRAFFIC CONTROL**, Add the following to **Subsection 401.4 TRAFFIC CONTROL MEASURES**:

#### **SEQUENCE OF CONSTRUCTION**

The sequence of construction will conform to the requirements of the Special Traffic Regulations.

The project will follow a phasing plan approved by the Engineer. All lanes will be maintained on a paved surface at all times during construction. This may be accomplished by using existing, new, or temporary asphalt pavement. Trenches will be completely backfilled and either paved with temporary asphalt pavement, or covered with metal plating as necessary to comply with this requirement and the "Special Traffic Regulations".

Night work will **not** be allowed on this project except where limited to Light Rail operational work.

The right to direct the sequence of construction is a function vested solely with the Engineer. Prior to commencement of the work, the Contractor will prepare and submit to the Engineer, a written phasing plan and work schedule for the project. This plan and work schedule will be submitted to the Engineer at the Preconstruction Conference for review.

When approved, the phasing plan and work schedule will not be changed without the written consent of the Engineer. Orderly procedure of all work to be performed under this contract will be the full responsibility of the Contractor. The work schedule will include the hours per day and the days per week that the Contractor plans to work on the project site.

10. **401 TRAFFIC CONTROL**, add the following to **Subsection 401.5 GENERAL TRAFFIC REGULATION**:

#### **TRAFFIC REGULATIONS**

- A. The following will be considered major streets:

7<sup>th</sup> Avenue; Central Avenue; 7<sup>th</sup> Street; and Indian School Road

- B. All traffic and/or traffic control devices on this project will be provided, maintained and/or controlled as

specified in the City of Phoenix Traffic Barricade Manual, 2007 edition and addendums thereof.

- C. Permission to restrict City streets, sidewalks and alleys (street closure permits) will be requested as specified in Chapter 3 of the City of Phoenix Traffic Barricade Manual, 2007 edition and addendums thereof.
- D. Unless otherwise provided for in the following "Special Traffic Regulations", all traffic on this project will be regulated as specified in Chapter 4 of the City of Phoenix Traffic Barricade Manual, 2007 edition and addendums thereof.
- E. No deviation from the "Special Traffic Regulations" will be allowed or implemented unless submitted to the Engineer for review and approval at least 14 days prior to proposed work.
- F. Only City of Phoenix certified contractors can set, move or remove temporary traffic control devices (signs, barricades, etc.). This annual certification can be scheduled by calling 602-262-6235.
- G. Civil sanctions for temporary traffic control violations apply as follows:

Civil Sanction Per Day	Violation Description
\$1,500	Creating an eminent risk of death or injury to the public within the public right-of-way
\$1,000	Restricting the right-of-way without proper certification or a right-of-way temporary use permit
\$1,000	Restricting traffic during peak traffic hours as described in the <u>Traffic Barricade Manual</u> without authorization
\$1,000	Failing to correct or cure a violation, as listed in this table, within the time period stated on the warning notice
\$1,000	Restricting traffic at signalized intersections without any work occurring
\$500	Closing a sidewalk improperly or closing a sidewalk without proper certification or closing a sidewalk without a right-of-way temporary use permit
\$500	Violating the restriction limits, times and locations, of the right-of-way temporary use permit
\$500	Missing or improper use of advance warning signs
\$500	Missing or improper use of barricades and channelizing devices
\$250	Leaving advanced warning signs facing traffic after restriction has been removed – per one traffic direction
\$250	Leaving traffic control devices in the right-of-way twenty-four hours after right-of-way temporary use permit expires, unless a request for a permit extension is received by the City prior to the expiration of such permit

\$250	Use of "unacceptable" quality traffic control devices as described in the <u>Traffic Barricade Manual</u>
\$250	Rendering a bus stop inaccessible without relocating it or making other accommodations

- H. Parking Meter Fees: To take a parking meter out of service requires a \$35 application fee and \$10 per meter per day.
- I. The City has the authority to remove and store temporary traffic control devices in emergency situations or as a last resort if the barricade owner will not pick them up. The City will assess removal and storage fees accordingly.

11. **401 TRAFFIC CONTROL**, Add the following to **Subsection 401.5 GENERAL TRAFFIC REGULATION**:

**SPECIAL TRAFFIC REGULATIONS**

15<sup>th</sup> Avenue can be reduced, when construction requires, during the times indicated below:

Maintain one lane south bound and one lane north bound Monday through Friday 8:30 a.m. to 4:00 p.m. and 7:00 p.m. to 6:00 a.m., non-peak times.

Pedestrian access shall be maintained same side of street at all times.

7<sup>th</sup> Avenue can be reduced, when construction requires, during the times indicated below:

Maintain two lanes north and south bound, Monday through Friday 6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m., peak times.

Maintain one lane south bound and two lanes north bound Monday through Friday 9:00 a.m. to 4:00 p.m. and 7:00 p.m. to 6:00 a.m., non-peak times.

Maintain two lanes (one each way), Weekends 7:00 p.m. Friday night thru to 6:00 a.m. Monday morning.

Central Avenue can be reduced, when construction requires, during the times indicated below:

Maintain one lane north and south bound, Monday through Friday 6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 7:00 p.m.

Maintain one lane (one each way), Weekends 7:00 p.m. Friday night thru to 6:00 a.m. Monday morning.

Pedestrian access shall be maintained same side of street at all times.

7<sup>th</sup> Street can be reduced, when construction requires, during the times indicated below:

Left turn lanes can be omitted.

Maintain two lanes north and south bound, Monday through Friday 6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m., peak times.

Maintain one lane south bound and two lanes north bound Monday through Friday 9:00 a.m. to 4:00 p.m. and 7:00 p.m. to 6:00 a.m., non-peak times.

Maintain two lanes (one each way), Weekends 7:00 p.m. Friday night thru to 6:00 a.m. Monday morning.

Bus stop(s) may be relocated.

Pedestrian access shall be maintained same side of street at all times.

12<sup>th</sup> Street can be reduced, when construction requires, during the times indicated below:

Maintain one lane north and south bound, Monday through Friday 6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 7:00 p.m.

Maintain one lane (one each way), Weekends 7:00 p.m. Friday night thru to 6:00 a.m. Monday morning.

Bus stop(s) may be relocated.

Pedestrian access shall be maintained same side of street at all times.

#### Van Buren Street

Maintain two lanes north and south bound, Monday through Friday 6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 7:00 p.m., peak times.

Maintain one lane south bound and two lanes north bound Monday through Friday 8:30 a.m. to 4:00 p.m. and 7:00 p.m. to 6:00 a.m., non-peak times.

Maintain two lanes (one each way), Weekends 7:00 p.m. Friday night thru to 6:00 a.m. Monday morning.

#### Variable Message Boards

Variable Message Boards may be provided, 24 hours per day, from at least 7 days prior to any roadway restrictions until all roadway traffic restrictions are removed or on approval from the area Right-of-Way Management representative.

#### **Police Officer Requirements**

The Contractor will provide one off-duty police officer, as defined in the City of Phoenix Traffic Barricade Manual, latest edition, at signalized intersections affected from 6:00 a.m. to 7:00 p.m. weekdays, and during working hours, nights and weekends when traffic is restricted (as described in the City of Phoenix Traffic Barricade Manual, latest edition).

When construction activities do not restrict traffic through the intersections, police officer hours may be reduced or suspended at the direction of the Engineer.

#### **Signalized Intersection Requirements**

The Contractor will notify the Engineer and the City Traffic Signal Shop (262-6021) at least 72 hours prior to the start of any construction in the vicinity of a signalized intersection where traffic signals may be affected.

The Contractor will provide the Engineer and the Traffic Signal Shop a written schedule indicating days, times and specific locations where traffic signals will be interrupted or modified. **When work has been completed, the Contractor will immediately notify the Traffic Signal Shop.**

### **Local Access Requirements**

The Contractor will maintain local access to all side streets, access roads driveways, alleys, and parking lots at all times and will notify residents 72 hours in advance of any restrictions which will affect their access. The Contractor will restore the access as soon as possible. If the primary access cannot be restored in a timely manner, the Contractor will provide an alternative which will be pre-determined with the residents prior to imposing any restrictions. Any local street restrictions imposed will be such that local area traffic circulation is maintained.

### **Business Access Requirements**

Access will be maintained to adjacent businesses at all times during their hours of operation. Access may be maintained by such measures as constructing driveways in half sections, or by providing bridging over new concrete. Properties with multiple driveway access will not have more than one driveway access restricted at any given time. While the one driveway is restricted, access to the other adjacent driveways will be maintained and unrestricted. Each individual driveway access restriction will be no more than fourteen (14) calendar days. Any business restrictions will be coordinated with the affected business in writing at least fourteen (14) days prior to imposing restrictions.

### **School Access Requirements**

The Contractor will provide clean and safe school zones, crosswalks, and walkways for students attending nearby schools during all hours of school use.

This may require backfilling trenches, temporary pavement, shoring, plating, or pedestrian bridges with handrails across open trenches.

In addition to school zones and crosswalks, the Contractor will maintain accessibility to all school bus routes during all hours of school use. The Contractor will notify the school principal(s) and the school Transportation Director at least fourteen (14) days prior to any restrictions, and will restore access as soon as possible.

### **Church Access Requirements**

The Contractor will maintain a high level of access to churches during all hours of church use. The Contractor will coordinate any access restrictions with the clergy at least fourteen (14) days prior to any restrictions, and will restore access as soon as possible.

### **Fire Station and Police Station Access Requirements**

The Contractor will maintain paved emergency vehicle access to and from all fire stations and police stations at all times. The Contractor will coordinate with the Fire Station and/or Police Station Commander at least fourteen (14) calendar days prior to any restrictions, and again at least 72 hours prior to any restrictions, and will restore full access as soon as possible.



## **Canal Access Road Requirements**

SRP Canal access and maintenance roads will remain open at all times.

## **Sanitation Pick-up**

The Contractor will provide sanitation pick-up for affected residents by relocating trash containers, or by providing alternative measures acceptable to the Public Works Department, Sanitation Division (602) 256-3310.

## **Special Events**

There may be special events scheduled to take place during the construction of this project. The Contractor will coordinate these events with the construction schedule. No additional compensation for delays associated with special events will be considered.

## **Special Sign Requirements**

The Contractor will provide, install and maintain advance notification; public informational; and directional access signs (for businesses, churches, hospitals, schools, etc.) that may be required by the Engineer. These signs may include, but are not limited to portable changeable message signs, radar/speed sensing trailers and other applicable Intelligent Transportation System type devices. The cost will be included in the bid item for Traffic Control Devices.

## **Bus Stops**

The Contractor will maintain all existing bus stop locations on this project in a safe manner, or provide alternate bus stop locations and related directional signage as required by the Engineer. Not fulfilling this requirement can lead to civil sanctions.

## **Flagging of Traffic**

No flagging of traffic will be permitted during the peak traffic hours of 6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 7:00 p.m. weekdays. If construction requires, intermittent flagging will be allowed from 8:30 a.m. to 4:00 p.m. if approved by the Engineer, to facilitate access for heavy construction equipment.

## **Traffic Control Plan**

The Contractor will submit a traffic control plan for approval, showing placement of all traffic control devices, including all conflicting signs to be covered/removed or relocated, or other features that may conflict with the placement of temporary signage. This plan will be professionally drawn on a 24" x 36" reproducible medium, and will be submitted to the Engineer at the Pre-Construction meeting or before. The Contractor will allow the Engineer fourteen (14) calendar days for review and approval of an acceptable plan.

## **Temporary Traffic Control Zone and Safety**

At the Pre-Construction conference, the Contractor will designate an employee, other than the Project Superintendent, who is knowledgeable in the principles and methods of proper traffic control and safety. This employee will be available on the project site during all periods of construction to coordinate and maintain safe, acceptable and effective temporary barricading whenever construction affects traffic. This person will be authorized to receive and fulfill instructions from the Engineer and will supervise and direct traffic control.

Instructions and information given by the Engineer to this person will be considered as having been given to the Contractor.

Failure to maintain temporary traffic control devices in accordance with the City of Phoenix Traffic Barricade Manual, 2007 edition, the approved Traffic Control Plan, and directives by the Engineer will result in suspension of work and/or civil sanctions until deficiencies are corrected to the satisfaction of the Engineer.

#### **Safety Fencing Requirement for Trenches and Excavations**

The Contractor will provide safety construction fencing around all open trenches and excavations during all non-working hours.

The Contractor will provide for the safety and welfare of the general public by adequately fencing all excavations and trenches that are permitted by the Engineer to remain open when construction is not in progress.

Fencing will be securely anchored to approved steel posts located six (6) feet on centers, having a minimum height of six (6) feet, and will consist of wire mesh fabric of sufficient weight and rigidity to adequately span a maximum supporting post separation of six (6) feet.

The fencing, when installed about the periphery of excavations and trenches, will form an effective barrier against intrusion by the general public into areas of construction. Fencing will not create sight distance restrictions or visual obstructions. At all times when construction is not in progress, the Contractor will be responsible for maintaining the fencing in good repair, and upon notification by the Engineer, will take immediate action to rectify any deficiency. Prior to the start of any excavating or trenching required for the execution of the proposed work, the Contractor will submit to the Engineer for approval, detailed plans showing types of materials and methods of fabrication for the protective fencing.

There will be no separate measurement or payment for furnishing, installing, or maintaining protective fencing. The cost will be considered incidental to the cost of the pipe and/or structures.

12. **401 TRAFFIC CONTROL**, Add the following to **Subsection 401.10 PAYMENT**:

#### **ALLOWANCE FOR UNIFORMED, OFF-DUTY LAW ENFORCEMENT OFFICER**

This project includes a lump sum "ALLOWANCE FOR UNIFORMED, OFF-DUTY LAW ENFORCEMENT OFFICER. The amount of this allowance is determined by the Engineer, and is not subject to individual bid pricing. All bidders will incorporate the amount pre-entered in the bid proposal and will reflect the same in the total amount bid for this project.

Payment for uniformed, off-duty law enforcement officers will be made from this allowance based on approved invoiced cost plus taxes, and a maximum 10 percent markup for overhead and profit.

#### **TRAFFIC CONTROL**

Payment for traffic control will be on a lump sum basis for Traffic Control Devices.

13. Add the following new **Section 402 ADDITIONAL CONSTRUCTION REQUIREMENTS** as follows:

#### **402.1 FIELD DOCUMENTATION**

The Contractor will document existing conditions within the project area prior to construction. Documentation will be video tape. The video tape will not be made from a moving vehicle. One copy of the video tape will be furnished to the City prior to the start of construction. The cost of the video taping will be considered incidental to the cost of the project. No separate measurement or payment will be made for this item.

#### **402.2 CONTRACTOR COMMUNICATION INFORMATION**

The Contractor will provide a pager and mobile phone to his on-site Project Superintendent to ensure that the Engineer can reach the Contractor's Superintendent. This pager and mobile phone must be accessible by local land-line telephone service. The Superintendent's pager and mobile phone will remain in service for the duration of the project, and these phone numbers will be included on the Contractor's list of emergency phone numbers submitted at the pre-construction conference.

#### **402.3 TRENCH PLATING**

In paved areas where vehicles will be driving over trench plating, the plates will be set to match flush with existing pavement on all sides. Setting plates on top of the pavement surface and installing temporary asphalt ramps around them will not be allowed.

#### **402.4 TRENCHING IN RIGHT OF WAY**

The Contractor will not be allowed to stockpile trench material or store any equipment other than the mainline track hoe within the right-of-way. The Contractor will secure temporary 6' chain link fence around the track hoe during non-working hours.

#### **402.9 PUBLIC INFORMATION SERVICES**

The City of Phoenix will provide a public information specialist for the community relations program on this project.

The Contractor will cooperate with the City's public information specialist firm in the preparation of newsletters, advanced notification for service disruptions, answering questions from the public, etc. He will also provide schedule update information to the specialist.

The Contractor will provide representatives as needed for all meetings with the public throughout the contract period.

The City will pay public information service costs associated with approved contract time extensions; however, if the Engineer determines that delays were caused by the Contractor, the additional costs for public information services will be deducted from the Contractor's final pay request.

14. **430 LANDSCAPING AND PLANTING**, Add the following to **Subsection 430.3 PLANT ESTABLISHMENT GUARANTEE AND MAINTENANCE** and **Subsection 430.15 MEASUREMENT AND PAYMENT**:

#### **430.3 PLANT ESTABLISHMENT GUARANTEE AND MAINTENANCE**

Prior to final acceptance of the landscaping, the Contractor will provide the City of Phoenix Street Maintenance Division with all water and electrical account numbers and billing information. Final acceptance will not be granted until this information is given to Aaron Romero, 200 W Washington, 5<sup>th</sup> Floor, Phoenix, AZ 85003; (602) 495-0317.

#### **430.15 MEASUREMENT AND PAYMENT**

Measurement and payment for plant establishment guarantee and maintenance will be on a monthly basis for acceptable landscape maintenance under the bid item "PLANT ESTABLISHMENT GUARANTEE AND MAINTENANCE". No payment will be made for unacceptable maintenance. When acceptable corrections have been made for the monthly inspection, the monthly payment will be released. Upon final acceptance, the final monthly payment will be made.

15. Add the following new **Section 432 PLANT SALVAGE** as follows:

#### **434.1 TREE STAKING**

Prior to staking trees, the Contractor will have a representative sample of tree staking inspected and approved by the Engineer and Landscape Architect for conformance with project plans and specifications.

The Contractor will correct any staking that does not conform to the approved representative samples.

There will be no separate measurement or payment for staking. The cost will be considered incidental to the cost of the plant materials.

#### **434.2 TRIMMING NEWLY PLANTED TREES**

The Contractor will trim all newly planted trees as necessary prior to staking so that low branches are removed where standard trees are required. Trees will be trimmed so that the tree is balanced and a central leader is maintained. When necessary, excess branching will be thinned so that a strong branching structure will develop. The Contractor will trim with a hand-held pruner. Trimming will be done to the satisfaction of the Engineer and the Landscape Architect.

There will be no separate measurement or payment for trimming new trees. The cost of the work will be considered incidental to the cost of furnishing and/or installing new trees.

#### **434.3 TRIMMING EXISTING TREES AND/OR SHRUBS IN PLACE**

Where there are existing trees to remain in place, the Contractor is to perform any trimming operation required to maintain pedestrian clearance to a height of 7' and to maintain sight visibility. Trimming which involves removal of branches over 3" in diameter or removal of branches which will alter the structure of the trees will be done by a person trained and Certified in the Practice of Arboriculture. The arborist will present certification papers to the Engineer and Landscape Architect for approval upon request. If the tree(s) become damaged or disfigured as a result of the trimming, the Engineer and Landscape Architect may require that the tree(s) be removed and replaced in size and kind by the Contractor. Removal and replacement will be done at the Contractor's expense.

Trimming existing trees and shrubs in place includes trimming of branches or foliage which overhang existing walls or fences where the branches create a problem for pedestrian clearance or for order. Trimming of existing trees will be done according to plans as noted and as directed by the Engineer and Landscape Architect.

Payment for this work will be included in the pay item "CLEARING AND GRUBBING" and will be compensation, in full, for all labor, equipment and materials necessary for the satisfactory completion of this work.

#### 434.4 PRUNING ROOTS OF EXISTING TREES

If construction impacts the roots, trunk or branches of existing trees that are designated to remain in place, the Contractor will take all necessary precautions to ensure the survival and protection of the tree. The Contractor will hire a Certified Arborist to investigate the areas surrounding existing trees to be saved in place, and locate existing roots. Existing roots will be excavated by hand, and hand-pruned as necessary to where the root is healthy. The Arborist will also make necessary recommendations for care of the tree(s) with respect to root feeding, fertilizing, or any other items required to ensure survival.

The Arborist will present certification papers for approval by the Engineer and Landscape Architect upon request.

Payment for this work will be included in the pay item "CLEARING AND GRUBBING" and will be compensation, in full, for all labor, equipment and materials necessary for the satisfactory completion of this work.

#### 434.5 PROVIDE PROTECTION FOR EXISTING TREES

The Contractor will be responsible for protecting existing trees to remain in place as tagged in the field and/or as noted on the plans. The Contractor will provide fencing around all trees and plants which are to remain in place that could be damaged by construction activity or equipment. A minimum area will be established around each plant based on its trunk caliper size. The minimum area will be one (1) foot of radius for each inch of caliper. For example, if a tree has a 6" caliper, there will be a minimum 6' radius area around the tree that will be considered a protected zone, and a fence will be placed at that location. The fencing will provide protection to the trunks and limbs from damage that could be caused by construction activity or equipment.

Any trimming that is necessary to prevent construction damage to existing trees will be pre-approved by the Landscape Architect. If the roots of existing trees could be affected in any way by construction they will be hand excavated and trimmed as described in the Special Provision, "PRUNING ROOTS OF EXISTING TREES". Root pruning will also be pre-approved by the Landscape Architect.

The Contractor will be responsible for all costs associated with protection of existing trees in place. If any damage occurs to trees or other plants to remain that, in the opinion of the Engineer and Landscape Architect, destroys, aesthetically disfigures, or threatens the plant's future survival, the Contractor will be responsible for replacing the tree in kind. Replacement trees will be the same size as the damaged tree. Prior to selection of any replacement tree, the Contractor will obtain approval of the size, type and purchase source from the Engineer and Landscape Architect.

Payment for this work will be included in the pay item "CLEARING AND GRUBBING" and will be compensation, in full, for all labor, equipment and materials necessary for the satisfactory completion of this work.

89. Add the following new **Section 500 ARTIST-DESIGNED ELEMENTS** as follows:

##### **Decorative Pavers**

Contractor shall fabricate, deliver and install, complete and in-place, artist-designed P1 and P2 Sculpted Pavers as specified in the plans and Supplemental Provisions MAG Section 102.

Measurement and payment for this work shall be made per square foot complete and in place for the pay item "DECORATIVE PAVERS" and will be compensation, in full, for all labor; shop drawings; coordination

time with Artist; use of Artist's rubber insets; shipping rubber back to the Artist; equipment and materials necessary for the satisfactory completion of this work. There will be no separate payment for any additional engineering, fabrication of samples, preparation of shop drawings, or coordination with the Artist on art shop drawings.

Measurement and payment for the concrete slab beneath Decorative Pavers shall be made per square foot complete and in place for the pay item "CONCRETE SLAB".

### **Benches**

The contractor shall fabricate, deliver and install, complete and in-place, artist-designed Bench B Elements and Bench S Elements as specified in the plans and Supplemental Provisions MAG Section 102.

Measurement and payment for this work shall be made per each, complete and in place for the pay items "BENCH PER DETAIL" (Bench Element B) and "BENCH WITHOUT BACK" (Bench Element S) and will be compensation, in full, for all labor; shop drawings; coordination time with Artist; use of Artist's rubber insets; shipping rubber back to the Artist; procurement and preparation of sandstone; equipment and materials necessary for the satisfactory completion of this work. There will be no separate payment for any additional engineering, fabrication of samples, preparation of shop drawings, or coordination with the Artist on art shop drawings.

Measurement and payment for the concrete slab beneath Bench Elements shall be made per square foot complete and in place for the pay item "CONCRETE SLAB".

### **Low Wall Elements**

The contractor shall fabricate, deliver and install, complete and in-place, artist-designed landscape walls including Low Wall (W1) Elements; Low Wall (W2) Elements; and Low Wall (W3) Elements as specified in the plans and Supplemental Provisions MAG Section 102.

Measurement and payment for this work shall be made per each, complete and in place for the pay item "CONCRETE LANDSCAPE WALL" and will be compensation, in full, for all labor; shop drawings; coordination time with Artist; use of Artist's rubber insets; shipping rubber back to the artist; procurement and preparation of sandstone; equipment and materials necessary for the satisfactory completion of this work. There will be no separate payment for any additional engineering, fabrication of samples, preparation of shop drawings, or coordination with the Artist on art shop drawings.

Measurement and payment for the concrete slab beneath Low Wall Elements shall be made per square foot complete and in place for the pay item "CONCRETE SLAB".

### **Entrance Sign**

The contractor shall fabricate, deliver and install, complete and in-place, the lighted, artist-designed Trail Markers including Trail Marker 1 (TM1); Trail Marker 2 (TM2); and Trail Marker (TM3) as specified in the plans and Supplemental Provisions MAG Section 102.

Measurement and payment for this work shall be made per each, complete and in place for the pay item "CONCRETE LANDSCAPE WALL" and will be compensation, in full, for all labor; shop drawings; coordination time with Artist; use of Artist's rubber insets; shipping rubber back to the artist; procurement and preparation of sandstone; equipment and materials necessary for the satisfactory completion of this work. There will be no separate payment for any additional engineering, fabrication of samples, preparation of shop drawings, or coordination with the Artist on art shop drawings.

### **Sculpted Shade Structures**

The contractor shall fabricate, attach artist-provided sculpted cast aluminum panels, deliver and install, complete and in-place, lighted, artist-designed Sculpted Shade Structures as specified in the plans and Supplemental Provisions MAG Section 102.

Measurement and payment for this work shall be made per each, complete and in place for the pay item "SINGLE SHADE CANOPY" and will be compensation, in full, for all labor; coordination time with artist; shop drawings, equipment and materials necessary for the satisfactory completion of this work. There will be no separate payment for any additional engineering, preparation of shop drawings or coordination with the Artist on art shop drawings.

89. **631 WATER TAPS AND METER SERVICE CONNECTIONS**, Add the following **Subsection 631.3 Excavation and Backfill**:

Bedding and backfill will be full depth ABC for water services installed under pavement using open trench method. The cost of the ABC material, labor and compaction will be included in the cost of the water service work.

91. **631 WATER TAPS AND METER SERVICE CONNECTIONS**, Add the following new **Subsection 631.9 REPLACEMENT, EXTENSION AND RELOCATION OF EXISTING WATER SERVICES AND METERS** as follows:

### **631.9 REPLACEMENT, EXTENSION AND RELOCATION OF EXISTING WATER SERVICES AND METERS**

#### **Extension or Replacement of Existing Water Service Lines**

The Contractor will replace or/and extend existing water service lines at the stations listed in these specifications or on the plans in accordance with Detail P-1342. The Engineer will determine when the existing lines are unsatisfactory and must be replaced. Generally, existing copper in good condition with sufficient cover will be extended. Water service lines other than copper will be replaced.

The water service will include, but is not limited to, locating the present tap, trenching, bedding, backfilling, disconnecting the existing service pipe from the corporation stop, furnishing and installing new service pipe, new appurtenant fittings, new curb stop and new meter coupling, and re-connection to the meter. The existing tapping saddle and corporation stop will remain, but the Contractor will not use any other salvaged service connection components. If the saddle is a single strap, the saddle will be replaced with a double strap saddle. In the event there is no tapping saddle, the Contractor will install one. The cost of the saddle and reinstallation of the corporation stop will be considered incidental to the water service replacement.

Inserts or adapters required to connect to the corporation stop are available at the Water Services Department yard at no cost to the Contractor. The Contractor must obtain a written order (AVO) from the Engineer before picking up said items.

Bedding and backfill will be full depth aggregate base course. Payment for furnishing and compacting the aggregate base course will be included in the bid item for replacing or extending existing water services.

The Contractor will schedule his work so that no open trenches are left overnight.

Materials for water service connections will conform to MAG Section 754 and City of Phoenix Supplement 610.4.4 and 610.4.5. Joints in the copper tubing will be made by the use of approved fittings, properly soldered



or by means of approved compression fittings such as flared joints or pack joints.

92. **631 WATER TAPS AND METER SERVICE CONNECTIONS**, Add the following new **Subsection 631.10 NEW WATER METER SERVICES** as follows:

#### **631.10 NEW WATER METER SERVICES**

##### **Description**

The Contractor will install new water service lines, meters and boxes at the locations listed in these specifications or on the plans in accordance with Detail P1342.

The work will include locating the new or existing water main, furnishing and installing a new saddle and corporation stop, tapping the main, furnishing and installing new copper water service pipe from the water main to the meter, connecting the water service pipe to the corporation stop, furnishing and installing a curb stop at the meter box, furnishing and installing a meter box, connecting the water service pipe to the curb stop, connecting the curb stop to the meter, furnishing and installing necessary fittings and couplings, and all trenching, backfill, compaction and surface/pavement restoration necessary for a complete new water meter service.

The Contractor will not use any salvaged service connection components.

The Contractor will schedule his work so that no open trenches are left overnight.

To install a new tap, the Contractor will install a new corporation stop utilizing an all-bronze double-strap tapping saddle.

All water service connections will be made using Type K copper tubing and fittings which conform to Sections 610 and 754. Joints in the copper tubing will be made by means of approved compression fittings such as flared joints or pack joints.

Sawcutting of the curb and gutter and sidewalk within the City right of way for installing water service pipe will not be allowed. Either jacking or boring methods are required. There will be no additional payment for jacking or boring of the water service, the cost will be included in the cost of the connection.

##### **Measurement and Payment**

The work required to install new water meter services will be measured per each for new complete water services and corresponding new meter boxes installed.

Payment will be made under the bid items, "WATER SERVICE CONNECTION (MAIN TO METER)" and "NEW WATER METER BOX AND COVER, FURNISH AND INSTALL".

93. **631 WATER TAPS AND METER SERVICE CONNECTIONS**, Add the following new **Subsection 631.11 WATER MAIN SHUTDOWN FEES** as follows:

#### **631.11 WATER MAIN SHUTDOWN FEES**

All water main shutdown fees for installation of new water services, extension or replacement of existing water service lines, and relocation of existing water meter boxes will be waived. When it becomes necessary to shut down existing water mains and services to install water service extensions or replacements, no main will be

left out of service for more than one (1) hour, and no individual service will be disrupted for more than five (5) continuous hours. Main valves will be operated by representatives of the City's Water Services Department. Shutdowns will not begin before 8:00 a.m. and will not extend past 4:00 p.m. It will be the Contractor's responsibility to notify all customers in advance that the water service will be turned off. The customers will be notified in writing at least 24-hours in advance and also verbally the day of the shutdown. Initial notification will include the reason for the shutdown, the date, the time and duration the water service will be shut off. A copy of the notification will be given to the Engineer.

95. **702 BASE MATERIALS** Add the following to **MAG Section 702 BASE MATERIALS**:

All Select Material specified on the plans and Standard Details will be Type "A" in accordance with Table 702-1.

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES  
ENCOUNTERED ON DEVELOPMENT PROJECTS  
Arizona Game and Fish Department  
Revised October 23, 2007

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

The Sonoran population of desert tortoises occurs south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position parallel to the ground at all times, and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 40 degrees Celsius (105 degrees Fahrenheit) unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to one-half mile, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 40 degrees Celsius (105 degrees Fahrenheit), the Department should be contacted to place the tortoise into a Department- regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mohave population of desert tortoises (north and west of the Colorado River). Mohave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.
- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.
- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

## **CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN**

Add the following new Section, **233 STORM WATER POLLUTION PREVENTION PLAN SUBMITTAL PROCESS**

### **233.1 DESCRIPTION**

The Contractor will use the Arizona Department of Environmental Quality (ADEQ) Smart NOI program for all submittals located at this web address:

<https://az.gov/app/smartnoi/>

The location of this process may change and it is the responsibility of the Contractor to verify the correct web address. All fees are the responsibility of the Contractor. The Contractor will apply for a "Stormwater Construction General Permit" with the project type "MUNICIPAL/PUBLIC".

Before any construction on site begins, the Contractor will submit the Notice of Intent (NOI) and the SWPPP through the Smart NOI program as the sole permittee. The Contractor will not commence any construction activities until the ADEQ send a written Notice Of Intent assigning an AZCON number.

As required by ADEQ the Contractor will submit a Notice of Termination (NOT) through the Smart NOI program. The Contractor will receive final payment only after receiving a written Notice of Termination Acknowledgement from ADEQ.

#### **Projects Impacting Impaired Waters**

Projects that will have any construction taking place within ¼ mile of the Salt River between 23rd Avenue and the confluence of the Gila River will impact "Impaired Waters". These projects will require the Contractor to design, implement, and evaluate a Monitoring Plan for stormwater runoff from their construction activities. The Monitoring Plan must be site specific and will be submitted to ADEQ as an appendix to the SWPPP. ADEQ is the final authority in the approval of the monitoring plan. A copy of the SWPPP and the Monitoring Plan will be kept on-site at all times. Additional copies of the Monitoring Plan should be made available to all personnel who anticipate participating in stormwater monitoring activities. The Contractor will have a copy of the monitoring plan, approved SWPPP, NOI, and ADEQ Authorization to Discharge posted at the jobsite prior to ground disturbance.

#### **Subcontractors**

All subcontractors will comply with all AZPDES requirements under the supervision of the General Contractor, and will submit a completed, signed subcontractor certification form, thereby designating themselves as co-permittees.

### **233.2 SAMPLE SWPPP STRUCTURE**

The following is a sample outline of the City requirement for a SWPPP submittal modeled after the ADEQ Construction General Permit Checklist. It will be the Contractor's responsibility to meet all the ADEQ requirements for a SWPPP and retain a qualified consultant to complete the SWPPP if necessary at no additional cost to the City.

1 SITE DESCRIPTION

1.1 Project Name: **CONTRACTOR WILL FILL IN PROJECT NAME**

Project No(s): **CONTRACTOR WILL FILL IN PROJECT NUMBER**

1.2 Project Location: **CONTRACTOR WILL FILL IN FOR PROJECT SITE LOCATION**

1.3 Owner's Name:

City of Phoenix, Street Transportation Department

1.4 Owner's Address:

200 West Washington Street, 5<sup>th</sup> Floor, Phoenix, Arizona 85003

1.5 Project Description: **CONTRACTOR WILL FILL IN PROJECT DESCRIPTION**

1.6 Runoff Coefficient and Soils Information:

A. Overall runoff coefficient of upstream drainage area will be unchanged by project.

B. Surface Soils Information: **(EXAMPLE ONLY, CONTRACTOR WILL FILL IN FOR PROJECT SITE LOCATION)**

<u>SOIL UNIT</u>	<u>SOIL TYPE (USDA TEXTURE)</u>	<u>PERMEABILITY (IN./HR.)</u>
<u>Laveen</u>	<u>Loam</u>	<u>0.6-2.0</u>
<u>Mohall</u>	<u>Clay Loam</u>	<u>0.2-0.6</u>
<u>Tucson</u>	<u>Clay Loam</u>	<u>0.2-0.6</u>
<u>Vecont</u>	<u>Clay</u>	<u>0.06-0.2</u>

1.7 Name of Receiving Water:

**EXAMPLE: SALT RIVER, CONTRACTOR WILL FILL FOR PROJECT SITE LOCATION**

2 CONTROLS

2.1 Erosion and Sediment Controls

2.1.a Stabilization Practices:

Stabilization practices on this site include:

- Permanent planting.

- Save selected existing trees.
- Decomposed granite
- **CONTRACTOR WILL ADD OR REMOVE STABILIZATION PRACTICES AS NECESSARY**

2.1.b Structural Practices:

May include:

- Temporary retention areas (subgrade excavation areas).
- Temporary catch basin inlet protection.
- Silt fence.
- Gravel filter berm.
- Temporary diversion dike.
- Straw bale barriers.
- Sandbag berm
- **CONTRACTOR WILL ADD OR REMOVE STABILIZATION PRACTICES AS NECESSARY**

2.1.c Narrative: Sequence of major activities.

**CONTRACTOR WILL COMPLETE NARRATIVE**

2.1.d Storm Water Management: **(CONTRACTOR WILL EDIT AS NECESSARY)**

Storm water drainage on will be provided by curb and gutter, catch basin inlets, and storm drains. No appreciable changes in runoff coefficients or in finished roadway grades will take place as a result of this project; therefore, no significant alterations of storm water drainage patterns or runoff quantities are expected.

During construction, storm water runoff will be managed by the following means, as conditions require:

- Temporary retention will be provided during roadway construction in areas excavated for subgrade.
- Silt fence, straw bales, sandbag berms, temporary diversion dikes, gravel filter berms or other BMP's as necessary to eliminate erosion may be used to prevent storm runoff from entering open storm drain pipes in excavated trenches. Temporary catch basin inlet protection may also be provided to remove sediment from drainage water before it enters the drainage system. Straw bale protection at outfall pipe locations may be employed during construction.

3 OTHER CONTROLS

3.1 Waste Disposal:

Waste Materials:

All waste materials including trash and construction debris from the site will be either disposed to a designated area immediately or collected and stored in securely-lidded metal dumpsters. The dumpsters will meet all local and State solid waste management regulations. The dumpsters will be emptied a minimum of once per week, or more often if necessary, and the trash will be hauled to an acceptable dump site. Lids will be closed at all times after work hours and during rain events. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal. Notices stating these practices will be posted on site, and the site superintendent who manages the day-to-day site operations, will be responsible for seeing

that these procedures are followed.

#### **ENTER PHONE NUMBER AND NAME OF SITE SUPERINTENDENT**

Concrete washout will only be allowed in designated areas. The hardened waste will be disposed of weekly and before final inspection of the project.

#### **Hazardous Waste:**

All hazardous waste materials will be disposed of in the manner specified by local or State regulations or by the manufacturer. Site personnel will be instructed in these practices, and the site superintendent who manages day-to-day site operations, will be responsible for seeing that these practices are followed.

#### **Sanitary Waste:**

All sanitary sewage generated on-site will be collected from the portable units a minimum of twice per week or as required by local regulations. Units will have a berm placed around them to ensure no spillage can occur.

#### **3.2 Off-Site Vehicle Tracking:**

Traffic will be maintained on paved roadway throughout construction in order to reduce vehicle tracking of sediments. The paved street beyond the start and end of the project will be swept as often as necessary to remove any excess mud, dirt, or rock that may be tracked from the site by construction vehicles, but not less than once per week. Dump trucks hauling material to or from the construction site will be covered with tarpaulin before leaving the site.

#### **4 DEMONSTRATION OF COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS**

The following Federal, State, and City regulations are followed in the preparation of this storm water pollution prevention plan:

- Section 402(p) of the Clean Water Act.
- Amended Section 405 of the Water Quality Act.
- "ADEQ Arizona Pollutant Discharge Elimination System General Permit for Discharge from Construction Activities to Waters of the United States, Permit AZG-2008-001."
- Flood Control District of Maricopa County "Drainage Design Manual for Maricopa County, Arizona, Volume III, Erosion Control."
- City of Phoenix Code 32C, "Storm Water Quality Protection."
- City of Phoenix "Grading and Drainage Ordinance for Purpose of Fulfilling NPDES Requirements."

#### **5 MAINTENANCE/INSPECTION PROCEDURES**

##### **5.1 Erosion and Sediment Control Practices:**

The following is a list of erosion and sediment controls to be used during the construction period:

##### **5.1.a Stabilization practices for this site include:**



- Permanent planting.
- Save selected existing trees.
- Decomposed granite.
- **CONTRACTOR TO ADD/DELETE AS NECESSARY**

5.1.b Structural practices for this site will include:

- Silt fence/straw bale barriers.
- Temporary diversion dike/gravel filter berm.
- Sandbag berm.
- Storm drain, curb and gutter, catch basins.
- Temporary catch basin inlet protection.
- Temporary retention in subgrade excavation areas.
- **CONTRACTOR TO ADD/DELETE AS NECESSARY**

5.2 Erosion and Sediment Control Maintenance and Inspection Practice:

Following is a list of the inspection and maintenance practices that will be used to maintain erosion and sediment control:

- All control measures will be inspected at least once every 7 days and within 24 hours after each rain event of 0.1 inch or greater.
- All measures will be maintained in good working order; if repair is necessary, it will be initiated within 24 hours of report. All changes will be completed within 14 days after an observation.
- Built-up sediment will be removed from silt fence when it has reduced the design capacity by 50%.
- Erosion control fabric and erosion control dikes will be inspected and any breaches promptly repaired.
- Permanent planting will be inspected for washout and healthy growth per specification requirements.
- A Compliance Evaluation Report will be made at each inspection to ensure all BMP's are functioning correctly.
- The site superintendent will be responsible for inspection, maintenance, and repair activities, and filling out the Compliance Evaluation Report.
- Personnel selected for inspection and maintenance responsibility will receive training from the site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used on-site in good working order.
- Only one side of roadways will be excavated for subgrade preparation at a time. This area will serve as temporary retention while traffic is maintained on the paved other half of the road. This will serve to control storm water and minimize tracking of sediments.

## 6 INVENTORY FOR POLLUTION PREVENTION PLAN (CONTRACTOR TO EDIT AS NECESSARY)

The materials or substances listed below are expected to be present on-site during construction:

- |                            |                              |
|----------------------------|------------------------------|
| • Concrete                 | • Wood                       |
| • Asphaltic Concrete       | • Paints                     |
| • Fertilizers              | • Herbicide/Pesticide        |
| • Petroleum-Based Products | • Soil Treatment Products    |
| • Cleaning Solvents/Agents | • Other Building Materials   |
| • Sealants                 | • Water Used in Dust Control |

## 6.1 Spill Prevention

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff:

### 6.1.a Good Housekeeping:

The following good housekeeping practices will be followed on-site during the construction period:

- An effort will be made to store only enough product required to do the immediate job.
- All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under proper cover and palletized.
- Liquid products will be placed on secondary containment pallets.
- Fuel tanks will be double walled.
- Drip pans will be used under all spigots unless on secondary containment.
- Products will be kept in their original containers with the original manufacturers' label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposing of the container.
- Manufacturers' recommendations for proper use and disposal will be followed.
- The site superintendent will inspect daily to ensure proper use and disposal of materials.
- Concrete washout will only be allowed in designated areas. The hardened waste will be disposed of weekly and before final inspection of the project.

### 6.1.b Hazardous Products:

These practices are used to reduce the risks associated with hazardous materials:

- Products will be kept in original containers unless they are not resealable.
- Original labels and material safety data sheets will be retained.
- If surplus product must be disposed of, manufacturers', or local and State recommended methods for proper disposal will be followed.
- Products will be monitored, an inventory will be conducted regularly, and documentation of all use and disposal will be maintained.

## 6.2 Product Specific Practices:

The following product specific practices will be followed on-site:

### 6.2.a Petroleum Products:

All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce any chance of leakage. Petroleum products will be stored in tightly-sealed containers which are clearly labeled. Any petroleum substances used on-site will be applied according to the manufacturer's recommendations. Spills and leaks from vehicles will be stopped immediately. Any leaking vehicle will have a drip pan placed under the leak until the unit is repaired. Secondary containment will be provided for all petroleum products stored onsite.

### 6.2.b Fertilizers, Herbicide, Pesticide, Soil Treatment:

All materials used will be applied only in the minimum amounts recommended by the manufacturer or as per specification. Once applied, materials will be worked into the soil to limit exposure to

storm water.

On-site storage will be covered and palletized to limit contact with storm water. The contents of any partially-used bags or containers will be transferred to a sealable plastic bin to avoid spills.

6.2.c Paints:

All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm drain system or on the ground, but will be properly disposed of according to manufacturers' instructions or State and local regulations.

6.2.d Concrete Trucks:

Concrete trucks will not be allowed to wash out or discharge surplus concrete or dump wash water other than in a designated wash-out area. The hardened waste will be disposed of weekly and before final inspection of the project.

6.3 Spill Prevention Practices:

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on-site. Equipment and materials will include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically designed for this purpose.
- All spills will be cleaned up immediately after discovery using dry cleanup methods.
- The spill area will be kept well-ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size—ADEQ Hotline: (602) 771-4505; City of Phoenix Hazardous Spills Emergency: 911; City of Phoenix Hazardous Spills Safety Section: (602) 262-7555.
- The spill prevention plan will be adjusted to include measures to prevent this type of spill from recurring and procedures to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
- The site superintendent will be responsible for the day-to-day site operations, will be the spill prevention and cleanup coordinator. He will designate other site personnel who will receive spill prevention and cleanup training.

6.4 Documentation:

Documentation of all inspections, failed BMP's, corrective action and training will be maintained onsite with the SWPPP at all times during the project, and will be maintained for not less than three (3) years after the project is complete.

## OTHER REQUIRED CERTIFICATIONS

The Contractor will complete and submit the following certification forms to the City before construction begins:

- Permittee Certification
- Contractor Certification
- Subcontractor Certification (for all Subcontractors as necessary)
- Operator's Compliance Evaluation Report

## PERMITTEE'S CERTIFICATION

As Contractor of the **GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH** project, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

---

**Company**

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## CONTRACTOR CERTIFICATION

I certify under penalty of law that I understand the terms and condition of the General Arizona Pollutant Discharge Elimination System (AZPDES) Permit that authorizes the storm water discharges associated with industrial activities from the construction site identified as part of this certification. Further, by my signature, I understand that I am becoming a co-permittee, along with the subcontractors signing such certifications, to the general (AZPDES) Permit for the storm water discharges associated with construction activities of the **GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH** project. As a co-permittee, I understand that I, and my company, are legally required under the Clean Water Act, to ensure compliance with the terms and conditions of the storm water pollution prevention plan developed under the AZPDES Permit and the terms of the AZPDES Permit.

\_\_\_\_\_  
General Contractor and Responsibility

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

### SUBCONTRACTOR'S CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of the General Arizona Pollutant Discharge Elimination System (AZPDES) Permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification. Further, by my signature, I understand that I am becoming a co-permittee, along with the owner(s) and other contractors and subcontractors signing such certifications, to the general AZPDES permit for the storm water discharges associated with construction activities of the **GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH** project. As a co-permittee, I understand that I, and my company, are legally required under the Clean Water Act, to ensure compliance with the terms and conditions of the storm water pollution prevention plan developed under the AZPDES permit and the terms of the AZPDES permit.

Authorized Representative of Subcontractor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

For (Subcontractor Name): \_\_\_\_\_

Construction Activities: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Verification of Completion and Acceptance of Subcontractor's Work

All work to be performed by \_\_\_\_\_ (Subcontractor) as part of the **GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH** project has been completed and accepted. Execution of this form absolves said subcontractor from liability for AZPDES violations which may occur subsequent to this date as a result of activities of the general contractor or other subcontractors.

Authorized Representative of Subcontractor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

For (Subcontractor Name): \_\_\_\_\_

Verified by (General Contractor): \_\_\_\_\_

Authorized Representative of General Contractor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## AZG-2008-001 General Permit for Construction Activities

### Operator's Compliance Evaluation Report

This project requires inspection of storm water pollution controls (BMPs) on a choice of frequency described in the General Permit, Part IV. H. Attach sheets if more space is needed.

Project: \_\_\_\_\_ Date: \_\_\_\_\_

Name & Title of Inspector: \_\_\_\_\_

Qualifications of Inspector: ☐ Attached; or ☐ Shown in Sec. \_\_\_\_\_ of the SWPPP.

☐ Periodic Inspection; or ☐ Rain Event inspection

Relevant weather information: \_\_\_\_\_

1. Location(s) of discharge from the site: ☐ None; or ☐ Description: \_\_\_\_\_

---

2. Location(s) of and identification of BMPs that need to be maintained; failed to operate or proved to be inadequate:  
☐ None; or ☐ Description: \_\_\_\_\_

---

3. Location(s) where additional BMPs are needed: ☐ None; or ☐ Description: \_\_\_\_\_

---

4. Corrective actions required, including changes and target dates: ☐ None; or ☐ Description: \_\_\_\_\_

---

5. Identify all sources of non-storm water and the associated pollution control measures: ☐ None; or ☐  
Description: \_\_\_\_\_

---

6. Identify material storage areas and evidence of, or potential for pollutant discharge from these areas: ☐ None; or  
☐ Description: \_\_\_\_\_

---

7. Identify any other apparent incidents of non-compliance: ☐ None; or ☐ Description: \_\_\_\_\_

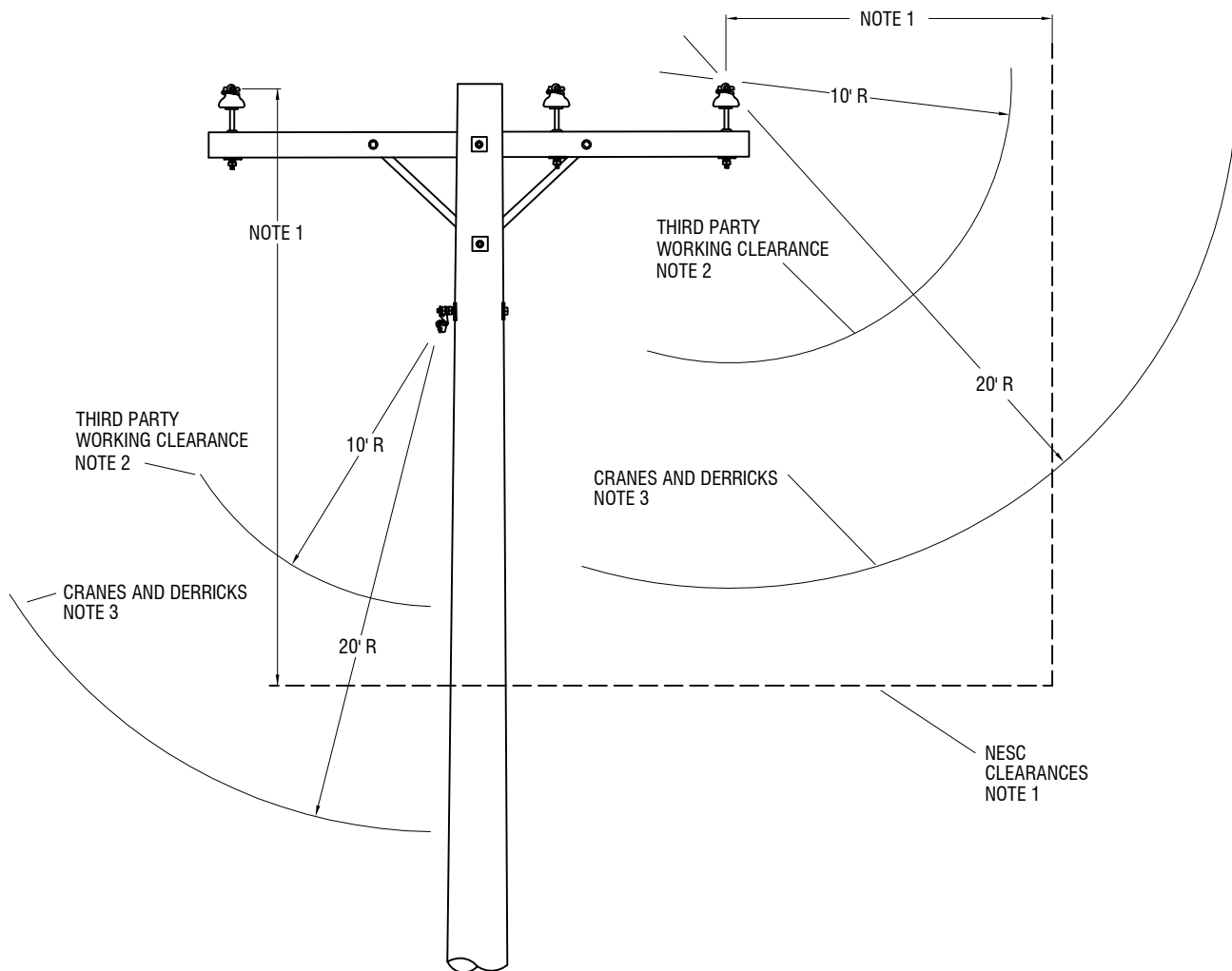
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8. If no incidents of non-compliance are identified in items 1 through 7 above, the inspector certifies that the construction project is being operated in compliance with the SWPPP and the General Permit.

*I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

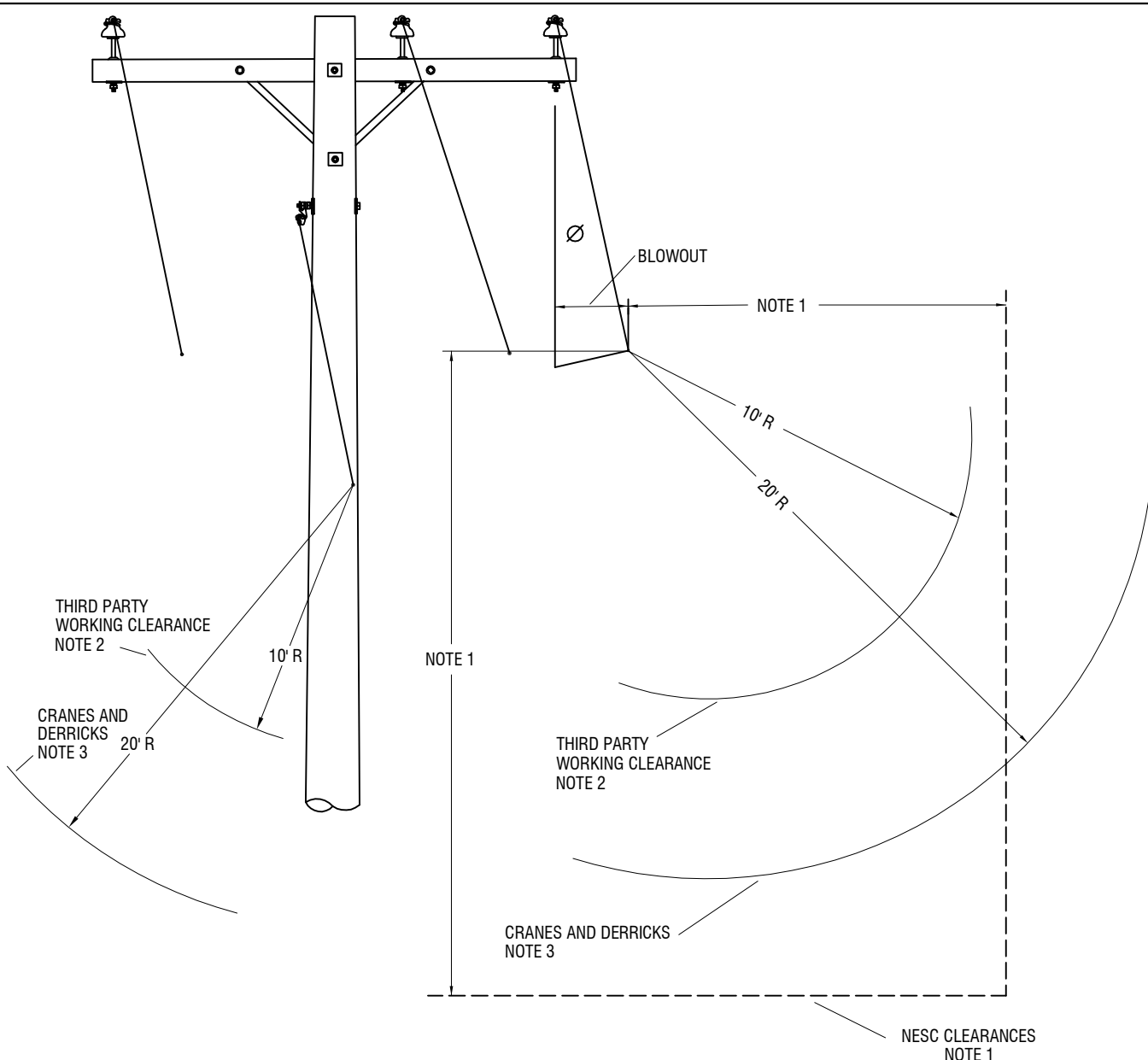
Certifying Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_



**NOTES:**

1. NO PORTION OF A BUILDING MAY BE WITHIN THIS BOUNDARY. SEE 1144 FOR DETAILS.
2. APS' THIRD PARTY WORKING CLEARANCE REQUIREMENTS ARE BASED ON THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) AND THE ARIZONA REVISED STATUTES (ARS). OSHA PROHIBITS A PERSON WHO IS NOT A QUALIFIED ELECTRICAL WORKER FROM GETTING ANY PORTION OF HIS OR HER BODY, OR ANYTHING HE OR SHE IS HANDLING, WITHIN 10 FEET OF A LINE 50KV OR LESS. ADDITIONALLY, OSHA AND ARS PROHIBIT ANY MACHINE OR MECHANICAL DEVICE, OR ANYTHING ATTACHED THERETO, INCLUDING THE LOAD AND "TAG LINES," FROM BEING BROUGHT WITHIN THIS MINIMUM APPROACH DISTANCE UNLESS THE LINE IS DE-ENERGIZED AND GROUNDED. FOR LINES RATED OVER 50KV PHASE TO PHASE, CLEARANCE SHALL BE 10 FEET PLUS 0.4 INCH PER KV FOR ALL VOLTAGES IN EXCESS OF 50KV. REFER THIRD PARTY INQUIRIES TO THE APS PUBLIC SAFETY DEPARTMENT AT PHONE NUMBER (602) 250-3418.
3. APS' THIRD PARTY WORKING CLEARANCE REQUIREMENTS REGARDING CRANES AND DERRICKS ARE BASED ON THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA). THE MINIMUM APPROACH DISTANCE IS 20 FEET FOR LINES RATED UP TO 350KV, AND 50 FEET FOR LINES RATED GREATER THAN 350KV. IF THE THIRD PARTY COORDINATES CLOSELY WITH APS, IT IS POSSIBLE THAT THIS MINIMUM APPROACH DISTANCE MIGHT BE ABLE TO BE REDUCED. REFER THIRD PARTY INQUIRIES TO THE APS PUBLIC SAFETY DEPARTMENT AT PHONE NUMBER (602) 250-3418.



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VOLTAGE  
 PHASE-TO-GROUND  
 50KV - 470KV  
 22KV - 50KV  
 750V - 22KV  
 300V - 750V  
 0 - 300V NOTE 4  
 GUY WIRES NOTE 5  
 INSULATED  
 COMMUNICATIONS

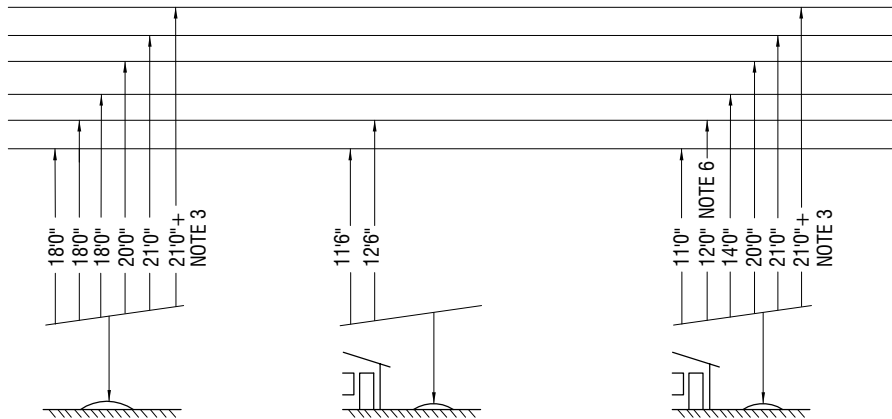


FIGURE 1  
 WITHIN RIGHT-OF-WAY  
 OF ROADS, STREETS,  
 ALLEYS, NONRESIDENTIAL  
 DRIVEWAYS, PARKING  
 LOTS, AND OTHER AREAS  
 SUBJECT TO TRUCK  
 TRAFFIC

FIGURE 2  
 SERVICE OVER  
 RESIDENTIAL  
 DRIVEWAYS

FIGURE 3  
 PEDESTRIAN SPACES & WAYS,  
 DRIVEWAYS, COMMERCIAL AREAS  
 NOT SUBJECT TO TRUCK  
 TRAFFIC-NOTES 7-9

(SEE 1137 FOR  
 RAILROAD CLEARANCES)

VOLTAGE  
 PHASE-TO-GROUND  
 300V - 750V  
 0 - 300V NOTE 4  
 GUY WIRES  
 &  
 COMMUNICATIONS

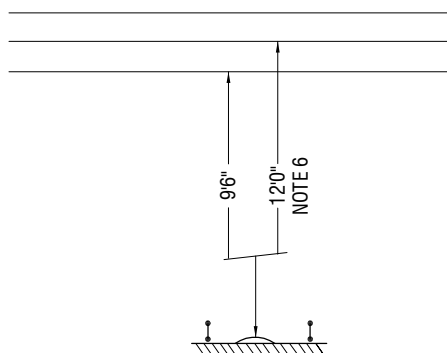


FIGURE 4  
 SERVICE OVER  
 PEDESTRIANS ONLY



ARIZONA PUBLIC SERVICE COMPANY  
 T&D CONSTRUCTION STANDARDS


**METHODS**  
**VERTICAL CLEARANCES OF WIRES, CONDUCTORS AND**  
**CABLES ABOVE GROUND**  
**APS-3**

SH 1 OF 2

**1136**


BY	LDR.	MGR.	DATE	REV.
RJ	B. BOOKER	D. LAMONTAGNE	08/2013	6

**NOTES:**

1. WHERE THE CONTROLLING AUTHORITY REQUIRES A GREATER CLEARANCE, THAT CLEARANCE SHALL BE MET. WHEN IT IS REASONABLE TO ASSUME VEHICLES HIGHER THAN 14 FEET WILL BE OPERATING UNDER THE LINE, THE CLEARANCE SHALL BE INCREASED BY THE DIFFERENCE BETWEEN 14 FEET AND THE HEIGHT OF THE VEHICLES.
2. MINIMUM VERTICAL CLEARANCES SHOWN APPLY FOR THE GREATER OF THE FOLLOWING:
  - 2.1 MAXIMUM OPERATING TEMPERATURE
    - A. COMMUNICATIONS 120 DEG.F
    - B. GUY WIRES 120 DEG.F
    - C. NEUTRAL CONDUCTORS 120 DEG.F
    - D. MULTIPLEX 120 DEG.F
    - E. OPEN WIRE (PRIM & SEC) 212 DEG.F (1,2)
    - F. OPEN WIRE (ACSS) 392 DEG.F
      - (1) 167 DEG.F. FOR COPPER
      - (2) 176 DEG. F. FOR A795V - LESS THAN 69KV
  - 2.2 32 DEG.F, .25 INCH RADIAL ICE, NO WIND, FINAL SAG (FOR THE MEDIUM LOADING DISTRICT ONLY).
3. INCREASE CLEARANCES 0.4 INCH PER KV FOR ALL VOLTAGE IN EXCESS OF 22KV. THIS 0.4 INCH ADDER SHALL BE INCREASED 3 PERCENT FOR EACH 1000 FEET IN EXCESS OF 3300 FEET ELEVATION FOR VOLTAGES EXCEEDING 50KV.
4. A NEUTRAL CONDUCTOR WHICH IS EFFECTIVELY GROUNDED THROUGHOUT ITS LENGTH AND IS ASSOCIATED WITH A CIRCUIT OF 0 TO 22KV TO GROUND MAY HAVE CLEARANCES SHOWN FOR ZERO VOLTS TO GROUND.
5. NO CLEARANCE FROM GROUND IS REQUIRED FOR ANCHOR GUYS NOT CROSSING STREETS, DRIVEWAYS, ROADS OR PATHWAYS, NOR FOR ANCHOR GUYS PROVIDED WITH GUARDS AND PARALLELING SIDEWALK CURBS.
6. MAY BE REDUCED TO 10'-6" FOR INSULATED SUPPLY SERVICE DROPS 0-300V TO GROUND OR INSULATED DRIP LOOPS OF SUPPLY SERVICE DROPS 0-300V TO GROUND WHERE THE HEIGHT OF THE BUILDING OR OTHER INSTALLATION DOES NOT PERMIT. 
7. TRUCKS ARE DEFINED AS ANY VEHICLE EXCEEDING 8 FEET IN HEIGHT.
8. TRUCK HEIGHT MUST BE PHYSICALLY RESTRICTED.
9. IF ACCESSIBLE TO EQUESTRIANS, USE FIGURE 1.

**REFERENCES:**

1. NESC 2007, RULE 232.

 ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS</b> <b>VERTICAL CLEARANCE OF WIRES, CONDUCTORS AND</b> <b>CABLE ABOVE GROUND</b>  <b>APS-4</b>	SH 2 OF 2
BY	LDR.	MGR.	DATE	REV.		<b>1136</b>
RJ	B. BOOKER	D. LAMONTAGNE	08/2013	6		

**GEOTECHNICAL EVALUATION REPORT  
PHOENIX GRAND CANALSCAPE  
SRP GRAND CANAL FROM 15<sup>th</sup> AVENUE TO  
INDIAN SCHOOL ROAD AND EAST GARFIELD  
STREET TO EAST VAN BUREN STREET  
PHOENIX, ARIZONA**

**Project Owner: City of Phoenix  
COP Project Number: ST87600074**

Kleinfelder Project No.: 20162084.001A

April 7, 2016

Prepared for:  
Mr. James Barr, PE  
T.Y. Lin International  
60 East Rio Salado Parkway  
Suite 400  
Tempe, Arizona 85281



  
Justin Anderson, EIT  
Professional

Reviewed By:  
Keith H. Dahlen, PE  
Senior Principal Geotechnical Engineer

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THE SPECIFIC PROJECT FOR WHICH THIS REPORT WAS PREPARED.





April 7, 2016  
Project No.: 20162084.001A

Mr. James Barr  
T.Y. Lin International  
60 East Rio Salado Parkway  
Suite 400  
Tempe, Arizona 85281

**SUBJECT: Geotechnical Evaluation Report  
Phoenix Grand Canalscape  
SRP Grand Canal from 15<sup>th</sup> Avenue to Indian School Road &  
East Garfield Street to East Van Buren Street  
City of Phoenix Project No. ST87600074  
Phoenix, Arizona**

Dear Mr. Barr:

Our Geotechnical Evaluation Report for the proposed Phoenix Grand Canalscape from 15<sup>th</sup> Avenue to Indian School Road and East Garfield Street to East Van Buren Street in Phoenix, Arizona is presented herewith for your review. Our services were performed in general accordance with the scope of services presented in our Proposal No. 50-0110/TEM15P13484, Revision 3, dated March 27, 2015.

We appreciate the opportunity to be of service on this project. If we can be of additional assistance as the design progresses, please do not hesitate to contact us.

Sincerely,

**KLEINFELDER**

Justin Anderson, EIT  
Professional



Reviewed By:  
Keith H. Dahlen, PE  
Senior Principal Geotechnical Engineer

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
<b>1 INTRODUCTION.....</b>	<b>1</b>
1.1 GENERAL.....	1
1.2 PROJECT DESCRIPTION.....	1
<b>2 FIELD EXPLORATION .....</b>	<b>3</b>
<b>3 LABORATORY TESTING.....</b>	<b>5</b>
<b>4 GEOLOGY &amp; GENERAL SITE CONDITIONS .....</b>	<b>6</b>
4.1 SITE GEOLOGY.....	6
4.2 SURFACE CONDITIONS .....	6
4.3 SUBSURFACE CONDITIONS .....	7
4.4 EXPANSION POTENTIAL .....	7
<b>5 ENGINEERING ANALYSES AND RECOMMENDATIONS.....</b>	<b>8</b>
5.1 GENERAL.....	8
5.2 PAVEMENTS.....	8
5.2.1 Traffic.....	8
5.2.2 Subgrade Soil Characteristics .....	9
5.2.3 Pavement Options.....	10
5.3 PEDESTRIAN BRIDGE FOUNDATIONS.....	11
5.3.1 Drilled Shafts.....	12
5.3.2 Abutment Spread Footings.....	14
5.3.3 Sliding .....	16
5.3.4 Eccentricity.....	17
5.3.5 Surface Drainage .....	17
5.3.6 Foundation Subgrade Preparation.....	17
5.3.7 Structure Backfill .....	18
5.4 SURFACE DRAINAGE .....	18
5.5 EXCAVATION CHARACTERISTICS .....	18
5.6 TEMPORARY EXCAVATIONS.....	19
<b>6 SITE PREPARATION AND GRADING RECOMMENDATIONS .....</b>	<b>20</b>
6.1 ENGINEERED FILL.....	20
6.2 AGGREGATE BASE COURSE.....	20
6.3 ASPHALTIC CONCRETE .....	20
6.4 TACK COAT .....	21
6.5 SITE GRADING .....	21
6.6 FILL PLACEMENT AND COMPACTION .....	22
<b>7 CLOSURE.....</b>	<b>23</b>
7.1 LIMITATIONS .....	23
7.2 ADDITIONAL SERVICES .....	24
Important Information About Your Geotechnical Report .....	L1-L2

## TABLE OF CONTENTS (continued)

### FIGURES – SITE VICINITY AND BORING LOCATION MAPS

Site Vicinity Map .....	Figure 1
Boring Location Maps .....	Figures 2-7

### APPENDIX A

USCS and Log Key .....	A1 – A2
Borings Logs .....	A3 – A16

### APPENDIX B

Laboratory Test Results .....	B1 – B12
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### APPENDIX C

Design Charts .....	C1 – C2
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## 1 INTRODUCTION

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### 1.1 GENERAL

This report presents the results of our geotechnical exploration for the proposed Phoenix Grand Canalscape pedestrian pathway improvements planned from 15<sup>th</sup> Avenue to Indian School Road and East Garfield Street to East Van Buren Street along the SRP Grand Canal in Phoenix, Arizona. The approximate location of the site is shown on the Site Vicinity Map, Figure 1.

The exploration included site reconnaissance, subsurface exploration, soil sampling, field and laboratory testing, engineering analyses, and preparation of this report. The purposes of this exploration were to provide information regarding the surface and subsurface soil conditions and general site geology, and to provide geotechnical and pavement recommendations for design and construction for the proposed multi-use pathways along the banks of the Grand Canal including two proposed pedestrian bridge locations.

The information contained herein is subject to the limitations presented in the 'Limitations' section of this report. In addition, as a member of the Geoprofessional Business Association (GBA), we included a brochure prepared by GBA in this report. We recommend that all individuals using this report read the limitations along with the accompanying GBA document.

### 1.2 PROJECT DESCRIPTION

We understand the City of Phoenix is planning to improve the existing banks of the Grand Canal for pedestrians as part of the Grand Canal Project from 15<sup>th</sup> Avenue to Indian School Road and East Garfield Street to East Van Buren Street in Phoenix, Arizona. The project will include constructing approximately 3.2 miles of multi-use pathway along the north bank of the Grand Canal from 15<sup>th</sup> Avenue to Indian School Road (2.5 miles), and along the north bank of the Grand Canal from East Garfield Street to East Van Buren Street (0.7 mile). We understand the pathway is to be paved with Portland cement concrete (PCC) for the majority of its length. Additionally, two pedestrian bridge structures are planned spanning the Grand Canal with preliminary locations just east of Central Avenue and at 10<sup>th</sup> Street. The bridges will be relatively

light, prefabricated single-span steel structures. Load information has not been provided at the time of this report.

Though not originally scoped, shade canopy structures and trail markers are also planned. These elements will likely be supported on shallow spread-type foundations. Loadings for these elements were not provided.

Our scope of work included the following:

- Review of project plans and development of a field exploration plan
- A geotechnical investigation including permitting and drilling 10 borings to a depth of 5 feet along the alignments of the planned pathways and 1 boring to a depth of 40 feet or practical refusal at each of the 4 pedestrian bridge abutment locations for a total of 14 borings. The boreholes were backfilled with grout and auger cuttings.
- Laboratory testing to evaluate relevant geotechnical engineering properties of the foundation soils.
- Analyses of the field and laboratory data to develop conclusions and recommendations to guide the geotechnical design and construction of the pathway sections and for the foundation support at the planned bridge abutments.
- The preparation of this report including a site vicinity map, boring location map, a summary of the field exploration activities, boring logs, laboratory test results, regional and site geology, geotechnical recommendations for the pavement design, and bridge abutment foundation design recommendations.

## **2 FIELD EXPLORATION**

---

Prior to our field exploration, Kleinfelder obtained a Salt River Project (SRP) right-of-way permit (Permit No. SEC-32-3, dated October 16, 2015), staked the boring locations, and cleared work areas with the Arizona Bluestake Center. National Barricade Company (NBC) was subcontracted to provide a traffic control plan and traffic control for the project. We coordinated with the designated SRP inspector prior to and after our field work.

The exploratory boring logging was performed on January 12 and 13, 2016, by Daniel Rossman, EIT of Kleinfelder. The subsurface soil conditions at the site were explored by drilling a total of 14 borings (designated as B-1 through B-12, B-5A, and B-7A). The approximate locations of the borings are shown on Figures 2 through 7 (Boring Location Map). Environmental monitoring for two borings located within or near a designated cultural area (Borings B11 and B12) during drilling activities was performed by Jill Heilman with EcoPlan Associates, Inc.

The borings were advanced with a truck-mounted CME-75 drill-rig and crew supplied by Geomechanics Southwest, Inc. The borings were drilled using 8.5-inch outer diameter (OD) hollow-stem augers to depths ranging from about 6 to 6.5 feet below the existing ground surface (bgs) for the planned pathway areas and 41 to 41.5 feet for the pedestrian bridge abutment locations. During the field exploration, the soils encountered were visually classified, logged, and sampled by Kleinfelder's field engineer. Samples were obtained using standard penetration test (SPT) split spoon samplers and Modified California samplers. Bulk samples of drill cuttings were also collected at selected depths from the borings. The SPT and Modified California samplers were driven using a hydraulic actuated 140-pound hammer free falling 30 inches. Unless noted otherwise on the boring logs, the sample driving resistance was recorded as number of blows per six inches of penetration. The penetration results are presented on the borings logs adjacent to each sample. The recovered soil samples were removed from the sampler, sealed to reduce moisture loss and submitted to the laboratory. The borings were backfilled with grout in the bottom 35 feet and hand tamped auger cuttings in the top 5 feet. The logs of the exploratory borings are presented in Appendix A. The following are pictures taken during the field exploration at the site.





**Photo 1 – Typical Drilling Along Canal Bank**



**Photo 2 – Auger Drilling at Boring B-8**



### 3 LABORATORY TESTING

Selected laboratory tests were performed on representative samples recovered from the field exploration to support our field classification and to provide information regarding engineering characteristics and properties of the subsurface soils. The testing was performed by Kleinfelder and CK Engineering, Inc. The laboratory testing program consisted of the following:

Table 3.1 – Laboratory Testing Program			
Laboratory Test	Sample Type	Number of Tests	Purpose of Test
Sieve Analysis (ASTM C136)	Bulk	10	Soil Classification and Pavement Design
Atterberg Limits (ASTM D4318)	Bulk	10	Soil Classification and Pavement Design
Moisture/Density* (ASTM D2216/D2937)	Ring	10	In-Situ Density and Moisture Conditions
Moisture Content	SPT	10	In-Situ Moisture Conditions
Standard Proctor	Bulk	4	Moisture/density relationship
Remolded Swell	Bulk	4	Soil swell characteristics

\* Dry density and moisture content information is presented on the boring logs.

The results of the laboratory tests are presented on the laboratory test data sheets in Appendix B. The laboratory test results are also summarized on the boring logs in Appendix A.

## **4 GEOLOGY & GENERAL SITE CONDITIONS**

---

### **4.1 SITE GEOLOGY**

The project site is located on a gently sloping basin floor of the Phoenix Valley. The Phoenix Valley consists of two distinct basins separated by a discontinuous series of northwest-southeast trending mountains. This geomorphology is typical of the Basin and Range Physiographic Province of Arizona characterized by a series of elongated and parallel mountain highlands separated by intervening down dropped basins. The west basin is part of the larger Luke Basin centered about 15 miles to the west of the site. The geologic units in this geomorphology includes Tertiary and older bedrock in the mountains and progressively thicker deposits of Tertiary and Quaternary basin fill deposits toward the center of the basin. The basin fill deposits typically include coarse grained alluvial fans near the basin edges progressing to finer grained deposits of alluvial plains in the lower and flatter portion of the basin floor.

The project site is located on the eastern side of the Luke Basin and it is underlain by fine grained deposits composed of a mixture of sand, silt and clay typical of the transition from the distal ends of an alluvial fan to alluvial plain deposit. The sequence contains local lenses of gravel with lime cemented nodules and less frequent cemented layers.

### **4.2 SURFACE CONDITIONS**

The project site parallels the concrete lined Grand Canal which runs mainly east to west through the central portion of Phoenix. The pathway will be located on the north side of the canal. In general, the ground is relatively flat generally sloping gently downward from east to west. The surrounding neighborhoods are primarily residential to light commercial with nearby schools and churches. The Grand Canal within the west portion of the project crosses major streets at 7<sup>th</sup> Avenue, Central Avenue, 7<sup>th</sup> Street, and 12<sup>th</sup> Street. Vegetation is not present adjacent to the canal as this is maintained by the Salt River Project for maintenance vehicles and pedestrian traffic.

#### 4.3 SUBSURFACE CONDITIONS

The subsurface profiles encountered at the boring locations were found to be relatively uniform, typically consisting of finer grained, soft to firm medium plasticity sandy lean clays (CL) to medium plasticity clayey sand (SC) and minor low plasticity silty sand (SM) lenses. The near surface soils are uncemented to weakly cemented with calcium carbonate (lime). Weakly to moderately lime cemented, typically hard clay soils were encountered below depths of about 25 to 30 feet within the four completed bridge borings. Individual boring logs with detailed descriptions are presented in Appendix A of this report.

Isolated moist to very moist layers were encountered within the borings which may be indicative of minor seepage from the canal. Groundwater was not encountered at the boring explorations to the depths explored. It is possible that variations in groundwater elevations may occur due to seasonal changes, run-off, precipitation, perching, and irrigation and/or construction activities. However, groundwater is anticipated to be deep and is not expected to impact construction of this project.

#### 4.4 EXPANSION POTENTIAL

The near surface soils encountered at the site were generally comprised of finer-grained soils with medium plasticity throughout the project alignment limits. Our laboratory testing included performing 10 grain-size and 10 Atterberg limits tests to classify the soils. The tested samples indicated plasticities of 3 to 18 and % passing the no. 200 sieve of 37 to 51 percent.

Four one-dimensional swell tests (of near surface samples remolded to 95% of standard proctor density) indicated swells of 2 to 4.3 percent. It appears the near surface soils possess a low to moderate potential for expansion upon wetting. However, based on standard engineering practice and general observation of the existing pavements, minimal recommended modification of the subgrade soils is considered necessary for this project. If the COP decides to spend the money needed to modify the subgrade to achieve a full 20 year design with a lower potential for detrimental subgrade, the subgrade soils could be treated to a minimum depth of 6 inches with either lime or cement (Maricopa Associated Governments' (MAG) Section 309, Lime Slurry Stabilization or MAG Section 311 Soil Cement Base Course).

## 5 ENGINEERING ANALYSES AND RECOMMENDATIONS

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### 5.1 GENERAL

Geotechnical engineering recommendations for the support of the pathway pavements associated with the proposed pedestrian pathway improvements as well as foundation design recommendations for support of the two pedestrian bridges are presented in the following sections. These recommendations are based on our understanding of the project, and the results of our field exploration, laboratory testing, and engineering analyses based on the conditions encountered at the site. Pavement design recommendations are based on the AASHTO Guide for Design of Pavement Structures (1993) for Low Volume Roads and foundation design recommendations are based on the AASHTO LRFD Bridge Design Specifications (2012).

### 5.2 PAVEMENTS

#### 5.2.1 Traffic

Traffic data for this project was limited to information provided by Chris Milner of TY Lin International using data provided by the Salt River Project (SRP). We understand the majority of these listed vehicles are used primarily during the months of January and February for major maintenance to the canal and for less frequent removals of large debris from the canal. The bucket trucks are used for power outages and new conductor installations. The following table presents the traffic types and vehicle considered in our design:

<b>Table 5.2.1 – Traffic Types and Loads</b>	
<b>Truck Type</b>	<b>Load (pounds)</b>
Crew Trucks	19,500
6-wheel Bucket Trucks	35,000
10-wheel Bucket Trucks	56,000
10-wheel Water Trucks	66,000
Fuel Trucks	56,000
Cat Excavators	49,000

We assumed there will approximately two crew trucks passing per day with 60 loadings per truck per year of the other truck types. The pathway 18-kip equivalent single axle loads (ESALs) for the design period were calculated by multiplying the one-way average daily traffic (ADT) with the design period (365 days times 20 years) and the Lane Distribution Factor (1.0 for a one lane pathway) for both flexible pavement and rigid pavement designs. The following table provides the design lane 18-kip ESALs for a design period of 20 years assuming a growth rate of 0 percent:

<b>Table 5.2.2 – Design Lane ADT and W<sub>18</sub></b>		
<b>Pavement Type</b>	<b>Pathway ADT (one-way)</b>	<b>Design Lane 18-kip ESALs (W<sub>18</sub>)</b>
Flexible	3	16,649
Rigid	3	16,261

Per AASHTO (1993), the Low Volume Road design method is used for ESALs of less than 50,000.

## 5.2.2 Subgrade Soil Characteristics

Kleinfelder drilled 14 borings and performed laboratory testing on selected samples recovered from the field exploration. The boring logs and the results of the laboratory tests are presented in Appendices A and B, respectively. The following table presents a summary of our laboratory test results of the subgrade soils obtained from the proposed pathway borings.

<b>Table 5.2.3 – Summary of Lab Test Data and Correlated R-values</b>			
<b>Boring (depth bps)</b>	<b>% Passing #200 Sieve</b>	<b>Plastic Index (PI)</b>	<b>Correlated R-Value</b>
B-1 (0.5– 5')	51	18	24
B-2 (0.5 – 5')	50	14	29
B-3 (0.5 – 5')	50	15	27
B-4 (0.5 – 5')	46	13	31
B-5 (0.5 – 5')	38	9	41
B-6 (0.5 – 5')	40	6	45
B-7 (0.5 – 5')	47	16	28
B-9 (0.5 - 5')	50	11	32
B-11 (0.5 – 5')	37	9	42
B-12 (2 – 3')	46	3	47

The average of the nine correlated R-values provided above is 34.6. However, for the Low Volume Road design method an R-value of 10, for soil types classified as “fair” was used for this analysis.

### 5.2.3 Pavement Options

#### 5.2.3.1 Flexible Pavement

Design criteria used for the design of AC pavement is provided in Table 5.2.4.

<b>Table 5.2.4– Pavement Design Criteria</b>	
<b>Design Factor</b>	<b>Design Criteria (Arterial)</b>
Analysis Period	20 years
Level of Reliability Terminal Serviceability	50% 2.5
Structural Coefficients: Asphalt Concrete (AC) Aggregate Base Course (ABC)	0.44 0.12

The following table presents minimum recommended AC over ABC and full depth AC pavement section options for proposed new pavements. The new pavement recommendations presented in the table below are recommended for the pedestrian walkways along the Grand Canal.

<b>Table 5.2.5 – Recommended AC Pavement Sections</b>					
<b>Design Years</b>	<b>AC</b>	<b>AB</b>	<b>Total</b>	<b>Required Structural Number</b>	<b>Actual Structural Number</b>
20	3.0	5.0	8.0	1.90	1.92
20	4.5	--	4.5	1.90	1.98

#### 5.2.3.2 Concrete Pavement

Rigid pavement design recommendations for the pathway are based on a combination of our experience and the minimum recommended section tables provided in AASHTO (1993) for low volume roads. In accordance with Table 4.8a, the following PCCP section is recommended:

<b>Table 5.2.6 – Recommended PCCP Pavement Section</b>			
<b>Design Years</b>	<b>PCCP</b>	<b>AB</b>	<b>Total</b>
20	6.0	4.0	10.0

It is recommended that welded wire matting be placed within the top ½ of the pavement section to help to reduce cracking of the concrete.

Site grading within the new pavement areas should be accomplished as recommended in the “Site Preparation and Grading” section of this report. A compacted subgrade of on-site soils or imported soils with comparable supporting properties is assumed. In an effort to reduce water infiltration and retard premature oxidation of the surfacing, the pavement surface should be sealed after the first summer of use, and routinely thereafter.

### 5.3 PEDESTRIAN BRIDGE FOUNDATIONS

Geotechnical engineering recommendations for the support of the proposed pedestrian bridges, shade structure canopies and trail markers are presented in the following sections. These recommendations are based on our understanding of the project, and the results of our field exploration and laboratory testing for the site. The information and recommendations presented in this section are based on Kleinfelder’s Borings B-5, B-5A, B-7, and B-7A.

Our understanding, based on information provided by TY Lin, is that the bridges will be founded on either drilled shafts or shallow spread footings. In general, drilled shafts, which derive their support from side shear within the mostly firm to hard clay soils present at depth, should provide support of the slab bridge piers with limited post-construction settlements. It also appears that the bridge can be supported on shallow spread footings based on the anticipation of tolerable (relatively small) total and differential settlements. Our understanding is that shade structure canopies and trail markers will be founded on shallow spread-type footings. The canopies could also be supported by small diameter, relatively shallow drilled shafts. Included herein are drilled shaft and spread footing recommendations for support of the bridge abutments and as applicable, the shade structure canopies and trail markers.



### 5.3.1 Drilled Shafts

#### 5.3.1.1 Axial Resistance

The strength and service limit state design analyses for redundant drilled shafts were completed per the LRFD methods described in Sections 10.5 and 10.8, respectively, of AASHTO (2012), and the ADOT Geotechnical Design Policy for Load Factor Resistance Design, DS-1 (2010a). The Alpha method of analysis for cohesive soils was employed. In all cases, the upper 2 feet of existing soils were neglected in terms of providing skin friction around the shafts.

The factored shaft resistance,  $R_R$ , for strength limit state design was determined using the nominal shaft side resistance  $R_s$ , computed per Section 10.8.3.5.2b of AASHTO LRFD (2012), and the corresponding resistance factor  $\phi_{qs}$ , from Section 10.5.5.2.4. The parameters used in the analyses are presented below in Table 5.3.1.

<b>Table 5.3.1 Drilled Shaft Analysis Parameters - Strength and Service Limit State Design for Axial Loading</b>				
<b>Parameter</b>	<b>Symbol</b>	<b>Depth Interval (ft)</b>		
		<b>0-10</b>	<b>10-25</b>	<b>25 – 40</b>
Soil Type (AASHTO)		Sandy Lean Clay	Sandy Lean Clay	Sandy Lean Clay
Soil Unit Weight (pcf)	$\gamma$			
Top of layer		105	110	110
Bottom of layer		105	110	110
Avg. SPT N-Value	N	10	20	50
Avg. Energy Corrected SPT N-Value	$N_{60}$	8	23	57
Resistance Factors for Redundant Shafts				
Tip	$\phi_{qp}$	n/a		
Shaft	$\phi_{qs}$	0.45		

The  $\gamma$  values were taken from our dry density (typically for the finer grained soils) and moisture content test results and based on our experience with these types of soils.

The strength and service limit axial resistance curves showing the factored axial resistance versus depth for drilled, cast-in-place shaft diameter of 1 foot are presented in Appendix C, Figure C1. It is recommended that shaft tips be a minimum of 15 feet below existing site grades.

To account for group effects, a resistance reduction factor,  $\eta$ , should not be applied to the axial resistance to closely spaced drilled shafts. Per Section 10.8.3.6.3 of AASHTO LRFD (2012), the reduction factor does not need to be applied for cohesive soils.

Shade structure canopies could be supported on drilled shafts embedded to a minimum depth of 10 feet below existing site grades, using the values presented in Figure C1.

### 5.3.1.2 Drilled Shafts - Lateral Loading

Table 5.3.2 presents recommended geotechnical parameters for use within the LPILE soil-shaft interaction program. It is recommended that LPILE Plus (Version 5.0 or later) be used for analysis of single shafts and that GROUP (Version 7 or later) be used for analysis of shaft groups where more than one shaft is connected by a cap.

Table 5.3.2 -Soil Input Parameters For Lpile						
Depth <sup>(1)</sup> (ft)		p-y	$\gamma'$	$\phi$	C	
From	To	Curve	(pcf)	(deg)	(psf)	$\epsilon_{50}$
0	10	Stiff Clay	105	--	1500	.0008
10	25	Stiff Clay	110	--	3000	.0065
25	40	Stiff Clay	110	--	6000	.005

(1) Depth 0 equates to existing ground surface.

For closely spaced drilled shafts, the p-y curves developed using the recommended parameters should be adjusted using a P-multiplier,  $P_m$ , with the values determined per Section 10.7.2.4 of AASHTO LRFD (2012).

### 5.3.1.3 Drilled Shaft Construction

The soils present to the anticipated shaft depths consist primarily of sandy lean clays which become more cemented and hard at depths below about 15 feet. Drilled-shaft excavations

completed to depths greater than about 30 feet could encounter localized caving and/or sloughing of the layers of cleaner coarse-grained soils present at depth.

Straight, drilled shaft excavations will likely be advanced with single-flight-auger or bucket auger bits to the recommended depth. Cleaning of the drilled-shaft excavations should be performed in accordance with Section 609 of the *ADOT Standard Specifications* (ADOT 2008). It should be verified by inspection and measurement that the excavation is open to that depth. The pier excavation should be cleaned so no more than 3 inches of slough or loose material is present in the bottom of the excavation.

### 5.3.2 Spread Footings

#### 5.3.2.1 Bearing Resistance

The strength and service limit state design analyses for spread footings were completed per the methods presented in Sections 10.5 and 10.6, respectively, of AASHTO (2010), and ADOT Geotechnical Design Policy SF-1 (2010). Given the similar soil conditions and relatively light loads imposed at the abutments and even lesser loads anticipated for shade canopy and trail marker foundations, the following recommendations can be applied to all spread footing locations on the project.

The factored net bearing resistance,  $q_{Rn}$ , for the strength limit state design was determined using the net nominal bearing resistance (ultimate bearing capacity),  $q_{nn}$ , calculated per Section 10.6.3.1.2a and bearing resistance factor,  $\phi_b$ , from Section 10.5.5.2.2 of AASHTO (2010). The parameters presented below in Table 5.3.3 were assumed for the nominal resistance and strength limit state analyses.

<b>Table 5.3.3</b> <b>Spread Footing Analysis Parameters –</b> <b>Strength Limit State Design for Bearing</b>		
Parameter	Symbol	Value
Soil Angle of Internal Friction	$\phi_f$	30 deg.
Soil Cohesion	C	0.2 ksf
Soil Total Unit Weight	$\gamma$	110 pcf
Avg. Overburden Corrected SPT N-Value	N <sub>160</sub>	9 to 50

Maximum Footing Length	L	12 ft
Minimum Footing Bearing Depth	$D_f$	2.0 ft
Footing Width	B	2 to 10 ft
Bearing Resistance Factor	$\phi_b$	0.45

The footing lengths and depths were assumed based on information provided by TYLin. The resulting factored net bearing resistance,  $q_{Rn}$ , versus effective footing width,  $B'$ , is shown as the “Strength Limit State” line in Figure C2.

Per the ADOT Geotechnical Design Policy SF-1 (2010), the modified Schmertmann method presented in Section 8.5 of the Federal Highway Administration (FHWA, 2006) Soils and Foundation Reference Manual was used to calculate settlements for the service limit state analysis. The parameters assumed for this analysis are presented in Table 5.3.4.

<b>Table 5.3.4</b> <b>Spread Footing Analysis Parameters</b> <b>Service Limit State Design for Bearing</b>				
Parameter	Symbol	Depth Interval (ft) <sup>(1)</sup>		
		0-10	10-20	20+
Soil Type	--	Sandy Lean Clay	Sandy Lean Clay	Sandy Lean Clay
Soil Unit Weight (pcf)	$\gamma$	105	110	110
Overburden-normalized Energy-corrected SPT N-value	$N_{160}$	8	23	57
Elastic Modulus (ksf)	$E_s$	$8(N_{160})^{(2)}$	$10(N_{160})^{(2)}$	$12(N_{160})^{(2)}$

<sup>(1)</sup> Depth 0 equates to existing ground surface.

<sup>(2)</sup> Elastic modulus used for analyses includes X Factor of 1.75 for plane strain case for  $L/B_f \geq 10$  (FHWA, 2006). Appropriate X Factor reduced for  $L/B_f < 10$ .

The parameters are based on the measured soil densities, distribution of  $N_{160}$  values and on the  $E_s$ - $N_{160}$  correlations from Section 5.9 of FHWA (2006). Figure C2 presents the family of service limit state curves developed per ADOT Geotechnical Design Policy SF-1 (2010) for design settlements of 0.5, 0.75 and 1.0 inches and effective footing widths,  $B_f$ , ranging from 2 to 12 feet. It should be noted that additional settlements could occur if the supporting clay soils become saturated either due to surface infiltration or leakage from the adjacent canal. Moisture

protection measures would be more critical (as compared to drilled shafts) if a spread footing foundation system is utilized.

### 5.3.3 Sliding

The factored sliding resistance,  $R_R$ , for limit state design should be determined using the nominal sliding resistance between soil and foundation,  $R_\tau$ , and nominal passive resistance,  $R_{ep}$ , per Section 10.6.3.4, and corresponding resistance factors,  $\phi_\tau$  and  $\phi_{ep}$ , from Section 10.5.5.2.2 of AASHTO LRFD (2010). We recommend the parameters presented in Table 5.3.5 be used for analyzing sliding resistance.

<b>Table 5.3.5</b> <b>Spread Footing Analysis Parameters - Strength Limit State Design for Sliding<sup>(1)</sup></b>		
Parameter	Symbol	Value
Factored Sliding Resistance		
Resistance Factor for Shear Between Soil and Foundation	$\phi_\tau$	0.90 <sup>(2)</sup>
Resistance Factor for Passive Resistance	$\phi_{ep}$	0.50
Nominal Sliding Resistance		
Soil Angle of Internal Friction	$\phi_f$	30 deg.
Soil Total Unit Weight	$\gamma$	110 pcf
Shear Resistance Between Soil and Foundation	$\delta$	30 deg = $\phi_f$
Passive Earth Pressure Coefficient	$K_p$	3.4

<sup>(1)</sup> Values based on a minimum of 12 inches of structure backfill placed beneath footings.

<sup>(2)</sup> Use resistance factor of 0.90 for soil on soil interface for the bottom horizontal plane of footing between toe and front of key. For remainder of footing bottom use values provided in AASHTO, 2010 Table 10.5.5.2.2-1. A value of 0.8 should be assumed for cast-in-place concrete overlying structure backfill.

Passive lateral soil resistance should typically be neglected in the upper 3 feet of finished grade due to the potential for disturbance. Below a depth of 3 feet, the nominal passive resistance can be estimated assuming a hydrostatic pressure distribution of 290 psf per foot.

#### 5.3.4 Eccentricity

The eccentricity in the L (long) dimension of an abutment is typically negligible, such that  $L = L'$ . The effective footing length ( $B'$ ) in the B (short) dimension is calculated as  $B' = B - 2e_B$ , where  $e_B$  is the B dimension eccentricity determined by the structural engineer. The maximum allowable eccentricity at the strength limit state should be calculated in accordance with ADOT Geotechnical Design Policy SF-2 (ADOT, 2010).

#### 5.3.5 Surface Drainage

Long-term performance of abutment walls and wingwalls will require that the subgrade soils and backfill be protected against excessive water infiltration and/or saturation. Surface drainage should be established away from foundations and walls to minimize moisture infiltration into the subgrade. Structural fill and backfill should be well compacted to reduce possible moisture infiltration through loose soil intervals.

#### 5.3.6 Foundation Subgrade Preparation

Trash, debris, vegetation (including roots) and other organics, any existing spread fill, any unstable (soft, loose, disturbed, water softened, sedimentation, collapsible, expansive, etc.) soils, and other deleterious materials should be removed from proposed abutment, shade canopy or trail marker foundation areas prior to construction. This site grading should extend laterally a minimum of 2 feet beyond footings. All areas of excavation should be observed and approved by a representative of the geotechnical engineer after clearing and before any placement of foundations or backfilling operations begin at the site.

Subgrade preparation should be performed as outlined in Section 203 of the ADOT Standard Specifications (2008). Recommended overexcavation and compaction recommendations for the bridge abutment footings are as follows:

*The ground surface should be modified to a minimum depth of 20 inches beneath footings. Subgrade preparation should consist of over-excavating a minimum of 12 inches, scarification and moisture conditioning of the next 8 inches to within 2 percent of the optimum moisture content, and compaction of the scarified soils to a minimum of 95 percent of the maximum ASTM D698 Standard Proctor density. The soils should be compacted to a flat and level ground surface for the proposed structures.*

If soft, loose, disturbed, water softened, low density, collapsible, expansive, or other undesirable materials are encountered in proposed footing areas at the exposed depth of overexcavation, the area should be deepened to extend through these undesirable materials. A lean (one-sack slurry mix) concrete may be used to backfill. Alternatively, the deepened area could be backfilled with structure backfill. The extent of removal of unsuitable materials should be as directed by the geotechnical engineer.

#### 5.3.7 Structure Backfill

All backfill placed for this project beneath footings (following recommended foundation excavations) should consist of structure backfill meeting the requirements of Section 203 of the ADOT Specifications (2008). All structure backfill should be moisture conditioned to within 2 percent of the optimum moisture content and compacted to a minimum of 100 percent of maximum ASTM D698 Standard Proctor density, when placed beneath footings. Consideration should be made at the time of construction in terms of compaction equipment to be used and the level of effort, lift thickness etc., for compaction immediately adjacent to walls.

### 5.4 SURFACE DRAINAGE

Long-term performance of the pavement will require that the subgrade soils and backfill be protected against excessive water infiltration and/or saturation. Surface drainage should be established away from pavements and other structures to minimize lateral moisture infiltration into the subgrade. Engineered (compacted) fill and backfill should be well compacted to reduce possible moisture infiltration through loose soil intervals.

### 5.5 EXCAVATION CHARACTERISTICS

The following general comments regarding excavation conditions are based on boring data. Based on the subsurface conditions encountered, excavations within the upper 10 feet bgs should be possible using conventional earth excavating equipment capable of handling variably soft to firm soils. We recommend that the earthwork contractor make his own assessment to satisfy himself as to the type of equipment required to excavate through these deposits.

## 5.6 TEMPORARY EXCAVATIONS

Temporary excavations for construction of footings, pipe extensions, etc. can be made with conventional earthmoving equipment. Temporary slopes should be excavated in accordance with OSHA (1995). In accordance with Subpart P, Appendix A, the native soils to a depth of 20 feet are considered to Type B soils. For excavations less than 20 feet in such soils, Subpart P, Appendix B indicates a maximum allowable unshored slope of 1H:1V (horizontal to vertical) for Type B soils. Flatter slopes may be required where either sandy soils are encountered or where the soils become excessively wet, and soft. Should steeper slopes be required due to the proximity of existing structures or other contractor needs, we should be contacted to provide additional analyses and recommendations.

The perimeter of all excavations should be protected against water runoff and infiltration near the edges to maintain stability. Heavy equipment and spoil piles should not be allowed within 10 feet of the edge of the excavation.



## **6 SITE PREPARATION AND GRADING RECOMMENDATIONS**

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### **6.1 ENGINEERED FILL**

Any imported fill materials used at the site should conform to the Maricopa Association of Governments' (MAG) Standard Specifications for Imported Borrow (MAG Section 210.2), or as amended by the City of Phoenix.

Engineered (compacted) fill used within proposed pavement areas should be inorganic soils (site derived or imported) with equal or better support characteristics than those materials which were encountered by Kleinfelder. Therefore, any imported fill materials used in the upper 3 feet underlying proposed new pavements at the site should conform to the Maricopa Association of Governments' (MAG) Standard Specifications for Imported Borrow (MAG Section 210.2), with the exception that the X value should not exceed 116.

Any proposed imported fill or backfill materials should meet the design criteria for this project and be approved by the geotechnical engineer and/or the City of Phoenix.

### **6.2 AGGREGATE BASE COURSE**

Aggregate Base materials used for the support of asphalt concrete pavements should conform to Section 702.2 of the MAG Standard Specifications, as amended by the City of Phoenix.

### **6.3 ASPHALTIC CONCRETE**

Pavement materials should be as specified in the requirements of MAG Standard Specifications for Asphalt Concrete (MAG Section 710), as amended by the City of Phoenix. Placement requirements for the asphaltic concrete pavement should be in accordance with the requirements presented in Section 321 of the MAG Standard Specifications for Asphalt Concrete Pavement, as amended by the City of Phoenix.

#### 6.4 TACK COAT

A tack coat should be applied as necessary to provide proper bonding prior to the placement of succeeding asphalt concrete layers. The tack coat should be as specified in Section 329 of the MAG Standard Specifications, as amended by the City of Phoenix.

#### 6.5 SITE GRADING

The following site grading recommendations are intended to provide support for the proposed new pavements at the site. Therefore, the grading activities at the site should be performed under observation and testing directed by the geotechnical engineer.

Trash, debris, vegetation (including roots) and other organics, any existing spread fill, any unstable (soft, loose, disturbed, water softened, etc.) soils, and other deleterious materials should be removed from proposed pavement and structure areas prior to construction. This site grading should extend laterally a minimum of 2 feet beyond structure areas. All areas of excavation should be observed and approved by a representative of the geotechnical engineer after clearing and before any filling operations begin at the site.

The subgrade preparation should be performed as outlined in Section 301 of the MAG Standard Specifications, as amended by the City of Phoenix. In proposed pavement areas, the ground surface should be prepared to a minimum depth of 12 inches below finished subgrade. Subgrade preparation should consist of over-excavating (if necessary), scarification, moisture conditioning (as needed), and compaction.

For cleared or over-excavated areas that will receive engineered (compacted) fill, proof-roll the exposed native soils at the base of the cleared or over-excavated section under the direct supervision of the geotechnical engineer. Following the approval of the geotechnical engineer, backfill the cleared or over-excavated area with approved on-site or imported engineered fill soils compacted as recommended in the following section.

If soft, loose, disturbed, water softened, low density, or other undesirable materials are encountered in proposed pavement areas, the area should be deepened to extend through these undesirable materials. The extent of removal of unsuitable materials should be indicated by the geotechnical engineer. The deepened area could be backfilled with on-site soils or

engineered fill with the approval of the geotechnical engineer. Alternatively, a lean concrete (Controlled Low Strength Material – MAG Section 728, one-sack slurry mix) may be used to backfill with the approval of the geotechnical engineer.

## 6.6 FILL PLACEMENT AND COMPACTION

Moisture conditioned on-site or imported engineered fill materials should be placed in 6- to 8-inch-thick loose lifts and compacted to elevate the site to specified finished grade. The materials shall be uniform with respect to material type and moisture content. The moisture content must be maintained until covered by the placement of the next lift.

In proposed pavement and foundation areas, the subgrade preparation and lifts of on-site or imported engineered fill soils should be moisture conditioned to minus 1 to plus 2 percentage points of their optimum moisture content, and uniformly compacted to a minimum of 95 percent of their maximum dry density as determined by ASTM D698. Aggregate Base Course (ABC) should be moisture conditioned to optimum moisture content or lower, and uniformly compacted to a minimum of 100 percent of the maximum dry density as determined by ASTM D698.

Observation and testing should be performed as necessary in order to meet the project requirements and the recommendations presented in this report.

## 7 CLOSURE

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### 7.1 LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of the geotechnical profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

The work performed was based on project information provided by the Client. If the Client does not retain Kleinfelder to review any plans and specifications, including any revisions or modifications to the plans and specifications, Kleinfelder assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, the Client must obtain written approval from Kleinfelder's engineer that such changes do not affect our recommendations. Failure to do so will vitiate Kleinfelder's recommendations.

This report may be used only by the Client and their representatives, and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site), or other factors may change over time, and additional work may be required with the passage of time. Any party other than the Client who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the Client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. Although risk can never be eliminated, more detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface studies or field tests, should be performed to reduce uncertainties. Acceptance of this report will indicate that the Client has reviewed the document and determined that it does not need or want a greater level of service than provided.

## 7.2 ADDITIONAL SERVICES

The recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be performed during the construction process to verify compliance with these recommendations. These tests and observations should include, but not necessarily be limited to, the following:

- Observations and testing during the site grading, preparation and earthwork.
- Consultation as may be required during construction.

We also recommend that project plans and specifications be reviewed by us to verify compatibility with our conclusions and recommendations. Additional information concerning the scope and cost of these services can be obtained from our office.

# Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

## Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

## Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

## A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

### Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

### Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

### Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910

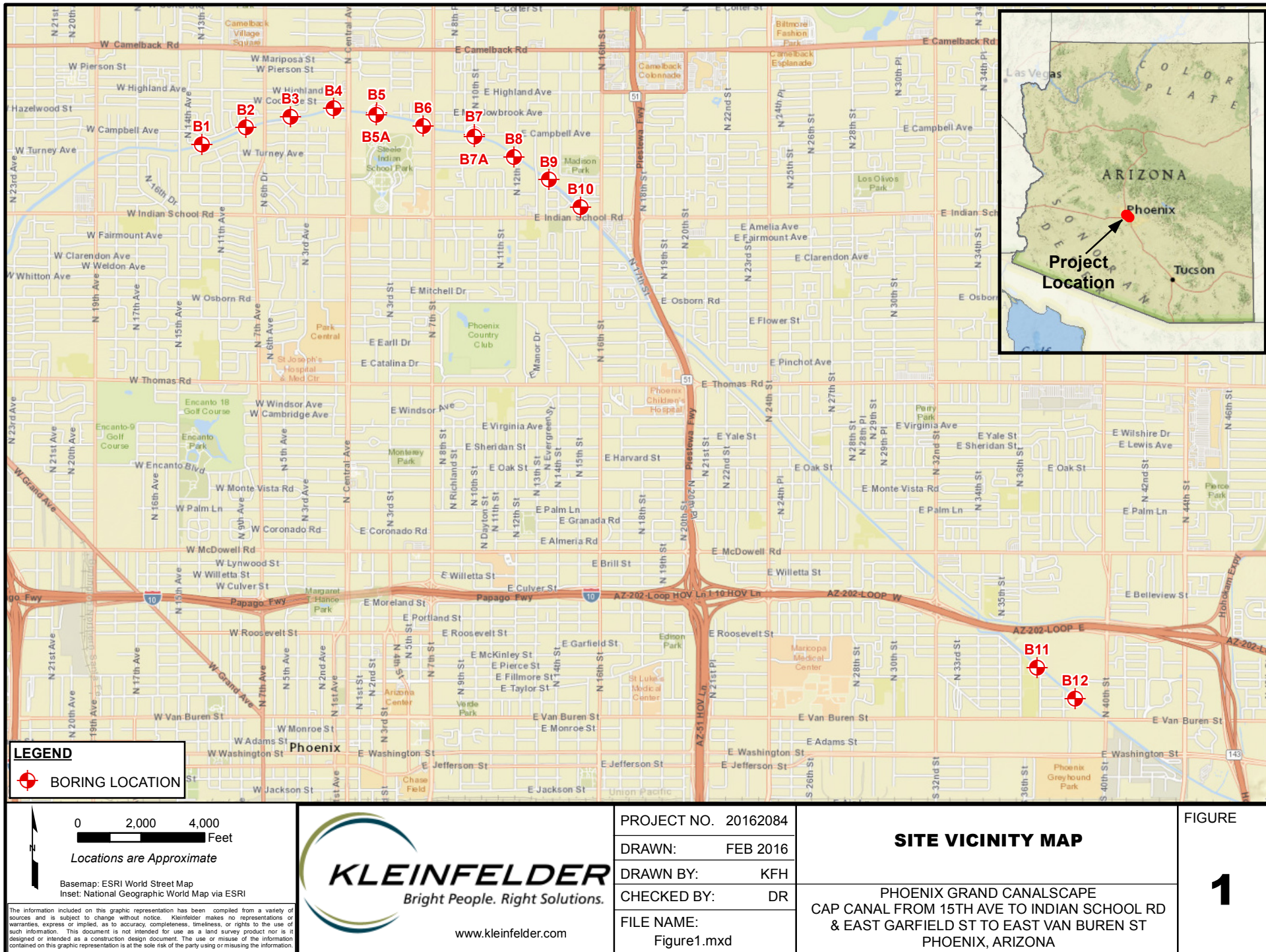
Telephone: 301/565-2733 Facsimile: 301/589-2017

e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)

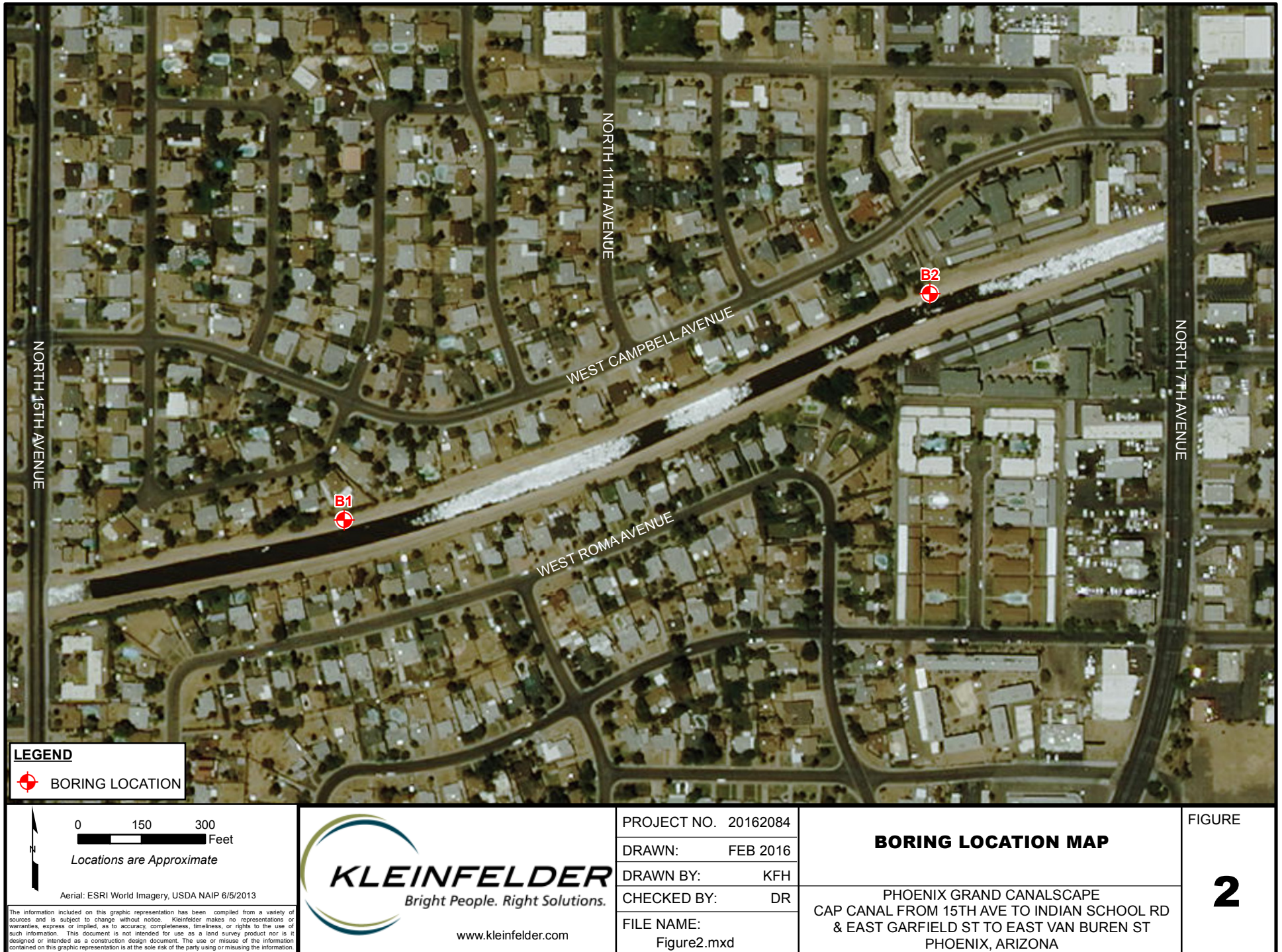
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## FIGURES

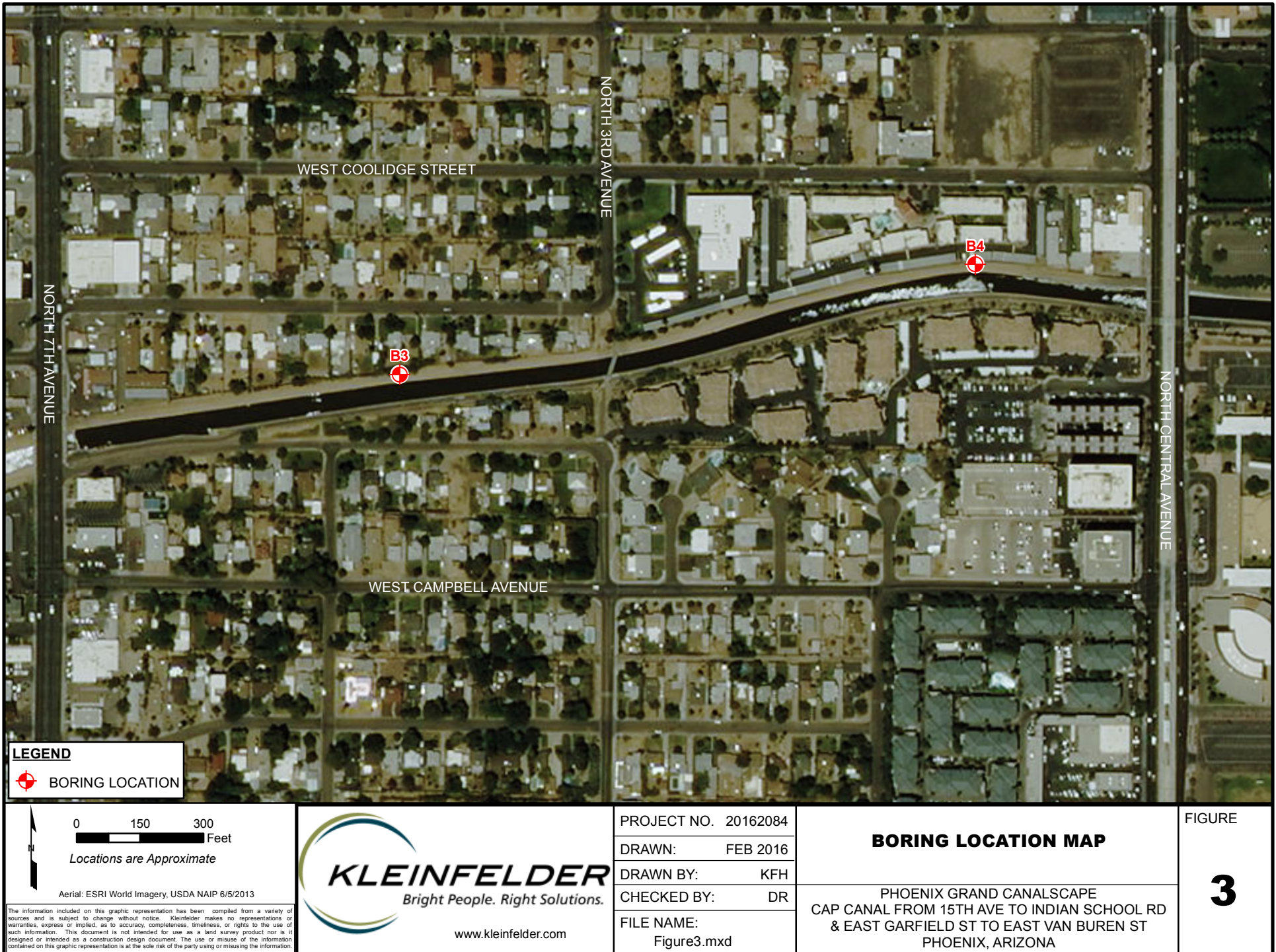












**LEGEND**

 BORING LOCATION



0 150 300  
Feet

*Locations are Approximate*

Aerial: ESRI World Imagery, USDA NAIP 6/5/2013

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PROJECT NO. 20162084

DRAWN: FEB 2016

DRAWN BY: KFH

CHECKED BY: DR

FILE NAME:  
Figure3.mxd

**BORING LOCATION MAP**

PHOENIX GRAND CANALSCAPE  
CAP CANAL FROM 15TH AVE TO INDIAN SCHOOL RD  
& EAST GARFIELD ST TO EAST VAN BUREN ST  
PHOENIX, ARIZONA

FIGURE

**3**

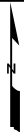




# LEGEND



BORING LOCATION



0 150 300  
Feet

Locations are Approximate

Aerial: ESRI World Imagery, USDA NAIP 6/5/2013

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DRAWN: FEB 2016

DRAWN BY: KFH

CHECKED BY: DR

FILE NAME:  
Figure4.mxd

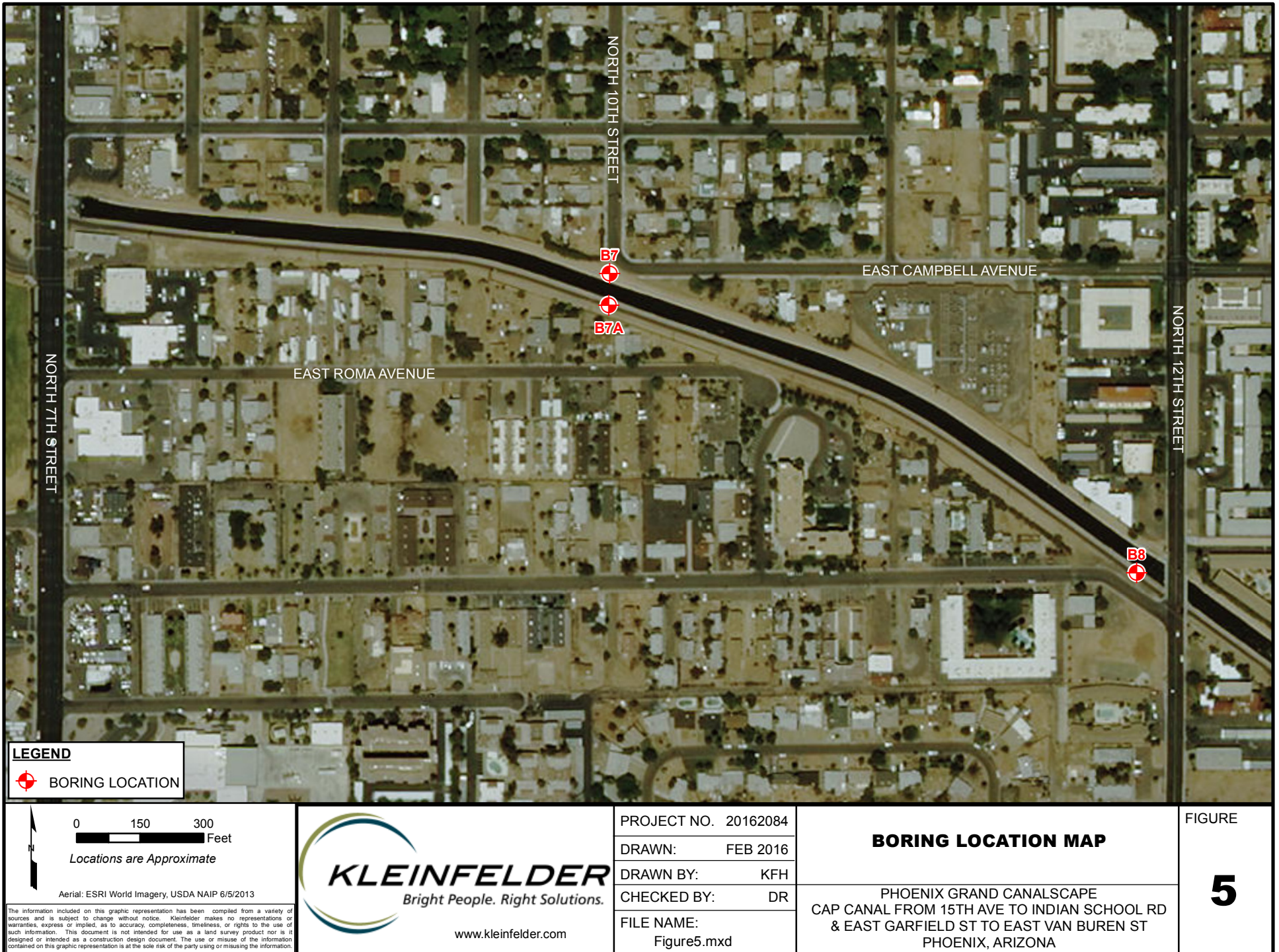
## BORING LOCATION MAP

PHOENIX GRAND CANALScape  
CAP CANAL FROM 15TH AVE TO INDIAN SCHOOL RD  
& EAST GARFIELD ST TO EAST VAN BUREN ST  
PHOENIX, ARIZONA

FIGURE

4










**LEGEND**

 BORING LOCATION

0 150 300 Feet  
Locations are Approximate

Aerial: ESRI World Imagery, USDA NAIP 6/5/2013

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DRAWN BY:	KFH
CHECKED BY:	DR
FILE NAME:	Figure6.mxd

<b>BORING LOCATION MAP</b>
PHOENIX GRAND CANALSCAPE CAP CANAL FROM 15TH AVE TO INDIAN SCHOOL RD & EAST GARFIELD ST TO EAST VAN BUREN ST PHOENIX, ARIZONA

FIGURE

**6**

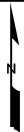




# LEGEND



BORING LOCATION



0 150 300  
Feet

Locations are Approximate

Aerial: ESRI World Imagery, USDA NAIP 6/5/2013

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PROJECT NO. 20162084

DRAWN: FEB 2016

DRAWN BY: KFH

CHECKED BY: DR

FILE NAME:  
Figure7.mxd

## BORING LOCATION MAP

PHOENIX GRAND CANALSCAPE  
CAP CANAL FROM 15TH AVE TO INDIAN SCHOOL RD  
& EAST GARFIELD ST TO EAST VAN BUREN ST  
PHOENIX, ARIZONA

FIGURE

7

## **APPENDIX A**

### **Boring Logs**



**SAMPLE/SAMPLER TYPE GRAPHICS**

BULK SAMPLE

CALIFORNIA SAMPLER  
(3 in. (76.2 mm.) outer diameter)STANDARD PENETRATION SPLIT SPOON SAMPLER  
(2 in. (50.8 mm.) outer diameter and 1-3/8 in. (34.9 mm.) inner diameter)**GROUND WATER GRAPHICS**

- ▽ WATER LEVEL (level where first observed)
- ▼ WATER LEVEL (level after exploration completion)
- ▽ WATER LEVEL (additional levels after exploration)
- 〰 OBSERVED SEEPAGE

**NOTES**

• The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.

• Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.

• No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.

• Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.

• In general, Unified Soil Classification System designations presented on the logs were based on visual classification in the field and were modified where appropriate based on gradation and index property testing.

• Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing the No. 200 sieve require dual USCS symbols, i.e., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.

• If sampler is not able to be driven at least 6 inches then 50/X indicates number of blows required to drive the identified sampler X inches with a 140 pound hammer falling 30 inches.

**UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)**

COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)					
GRAVELS (More than half of coarse fraction is larger than the #4 sieve)					
CLEAN GRAVEL WITH <5% FINES	Cu ≥4 and 1 ≤ Cc ≤ 3		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES	
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES	
	Cu ≥4 and 1 ≤ Cc ≤ 3		GW-GM	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES	
			GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES	
			GP-GM	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES	
			GP-GC	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES	
	Cu <4 and/or 1 > Cc >3		GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES	
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	
			GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES	
GRAVELS WITH > 12% FINES					
SANDS (More than half of coarse fraction is smaller than the #4 sieve)					
CLEAN SANDS WITH <5% FINES	Cu ≥6 and 1 ≤ Cc ≤ 3		SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES	
	Cu <6 and/or 1 > Cc >3		SP	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES	
SANDS WITH 5% TO 12% FINES	Cu ≥6 and 1 ≤ Cc ≤ 3		SW-SM	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES	
			SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES	
	Cu <6 and/or 1 > Cc >3		SP-SM	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES	
			SP-SC	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES	
SANDS WITH > 12% FINES			SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES	
			SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES	
			SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES	
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)					
SILTS AND CLAYS (Liquid Limit less than 50)		ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY		
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS		
		CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS		
SILTS AND CLAYS (Liquid Limit greater than 50)		OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY		
		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT		
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
		OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY		



PROJECT NO.: 20162084

DRAWN BY:

CHECKED BY:

DATE:

REVISED: -

**GRAPHICS KEY**

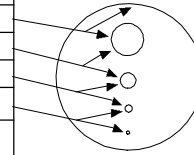
Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ

PLATE

A-1

**GRAIN SIZE**

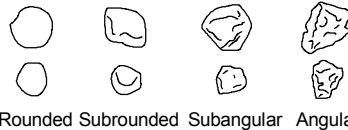
DESCRIPTION	SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders	>12 in. (304.8 mm.)	>12 in. (304.8 mm.)	Larger than basketball-sized
Cobbles	3 - 12 in. (76.2 - 304.8 mm.)	3 - 12 in. (76.2 - 304.8 mm.)	Fist-sized to basketball-sized
Gravel	coarse 3/4 - 3 in. (19 - 76.2 mm.)	3/4 - 3 in. (19 - 76.2 mm.)	Thumb-sized to fist-sized
	fine #4 - 3/4 in. (#4 - 19 mm.)	0.19 - 0.75 in. (4.8 - 19 mm.)	Pea-sized to thumb-sized
Sand	coarse #10 - #4	0.075 - 0.19 in. (2 - 4.9 mm.)	Rock salt-sized to pea-sized
	medium #40 - #10	0.017 - 0.075 in. (0.43 - 2 mm.)	Sugar-sized to rock salt-sized
	fine #200 - #40	0.0029 - 0.017 in. (0.07 - 0.43 mm.)	Flour-sized to sugar-sized
Fines	Passing #200	<0.0029 in. (<0.07 mm.)	Flour-sized and smaller

**Munsell Color**

NAME	ABBR
Red	R
Yellow Red	YR
Yellow	Y
Green Yellow	GY
Green	G
Blue Green	BG
Blue	B
Purple Blue	PB
Purple	P
Red Purple	RP
Black	N

**ANGULARITY**

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

**Particles Present**

Amount	Percentage
trace	<5
few	5-10
little	15-25
some	30-45
and	50
mostly	50-100

**PLASTICITY**

DESCRIPTION	LL	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm.) thread cannot be rolled at any water content.
Low (L)	< 30	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	30 - 50	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit.
High (H)	> 50	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit.

**MOISTURE CONTENT**

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

**REACTION WITH HYDROCHLORIC ACID**

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

**APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL**

APPARENT DENSITY	SPT-N <sub>60</sub> (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)
Very Loose	<4	<4	<5	0 - 15
Loose	4 - 10	5 - 12	5 - 15	15 - 35
Medium Dense	10 - 30	12 - 35	15 - 40	35 - 65
Dense	30 - 50	35 - 60	40 - 70	65 - 85
Very Dense	>50	>60	>70	85 - 100

**CONSISTENCY - FINE-GRAINED SOIL**

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (q <sub>u</sub> )(psf)	CRITERIA
Very Soft	< 1000	Thumb will penetrate soil more than 1 in. (25 mm.)
Soft	1000 - 2000	Thumb will penetrate soil about 1 in. (25 mm.)
Firm	2000 - 4000	Thumb will indent soil about 1/4-in. (6 mm.)
Hard	4000 - 8000	Thumb will not indent soil but readily indented with thumbnail
Very Hard	> 8000	Thumbnail will not indent soil

NOTE: AFTER TERZAGHI AND PECK, 1948

**STRUCTURE**

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4-in. thick, note thickness
Laminated	Alternating layers of varying material or color with the layer less than 1/4-in. thick, note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

**CEMENTATION**

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure



PROJECT NO.: 20162084  
 DRAWN BY:  
 CHECKED BY:  
 DATE:  
 REVISED: -


**SOIL DESCRIPTION KEY**

Phoenix Grand Canalscape  
 CAP Canal from 15th Ave to Indian School Rd  
 & East Garfield St to East Van Buren St  
 Phoenix, AZ

PLATE

A-2

<b>Date Begin - End:</b> 1/12/2016	<b>Drilling Company:</b> Geomechanics Southwest, Inc.	<b>BORING LOG B-1</b>
<b>Logged By:</b> D. Rossman	<b>Drill Crew:</b> Ramon/Fernando	
<b>Hor.-Vert. Datum:</b> NAD83	<b>Drilling Equipment:</b> CME-75	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> Hollow Stem Auger	
<b>Weather:</b> 64/57 Clear	<b>Exploration Diameter:</b> 8 1/4" in. O.D.	
		<b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.50103° N Longitude: 112.08891° W Surface Condition: Dirt Trail	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<u>Fill: Landscape Plating</u> <b>2-4" Poorly graded SAND (SP):</b> coarse-grained, sub-angular  <u>Native:</u> <b>Sandy Lean CLAY (CL):</b> medium plasticity, reddish brown, moist, no reaction with HCL, soft to firm				CL			97	51	33	18	
				BC=4 6			14.0	96.9					
5		light greyish brown lime cemented inclusions, less sand, increased plasticity, strong HCL reaction below 5 ft.		BC=5 7 11									

The boring was terminated at approximately 6.5 ft. below ground surface. The boring was backfilled with auger cuttings on January 12, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.

**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.



PROJECT NO.: 20162084  
DRAWN BY: DR  
CHECKED BY: KD  
DATE: 2/16/2016  
REVISED: -

### BORING LOG B-1

Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ

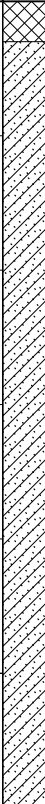
PLATE

A-3

PAGE: 1 of 1


PLOTTED: 02/22/2016 11:28 AM BY: drossman

<b>Date Begin - End:</b> 1/12/2016	<b>Drilling Company:</b> Geomechanics Southwest, Inc.	<b>BORING LOG B-2</b>
<b>Logged By:</b> D. Rossman	<b>Drill Crew:</b> Ramon/Fernando	
<b>Hor.-Vert. Datum:</b> NAD83	<b>Drilling Equipment:</b> CME-75	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> Hollow Stem Auger	
<b>Weather:</b> 64/57 Clear	<b>Exploration Diameter:</b> 8 1/4" in. O.D.	
		<b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.50253° N Longitude: 112.08437° W Surface Condition: Dirt Trail	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>Fill: Landscape Plating</b> <b>2-4" Poorly graded SAND (SP):</b> coarse-grained, sub-angular  <b>Native:</b> <b>Clayey SAND (SC):</b> fine to medium-grained, medium plasticity, dark brown, moist, weak reaction with HCL, moderately firm to firm   											

The boring was terminated at approximately 6 ft. below ground surface. The boring was backfilled with auger cuttings on January 12, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.  
**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.

	PROJECT NO.: 20162084	<b>BORING LOG B-2</b>	<b>PLATE</b>
	DRAWN BY: DR		
	CHECKED BY: KD	Phoenix Grand Canalscape CAP Canal from 15th Ave to Indian School Rd & East Garfield St to East Van Buren St Phoenix, AZ	<b>A-4</b>
	DATE: 2/16/2016		
	REVISED: -		
		PAGE: 1 of 1	

GINT FILE: PROJECTWISE: 20162084\_canalscape.gpj  
 GINT TEMPLATE: PROJECTWISE: KLF\_STANDARD\_GINT\_LIBRARY\_2016.GLB [KLF\_BORING/TEST PIT SOIL LOG]

PLOTTED: 02/22/2016 11:28 AM BY: drossman

<b>Date Begin - End:</b> 1/12/2016	<b>Drilling Company:</b> Geomechanics Southwest, Inc.	<b>BORING LOG B-3</b>
<b>Logged By:</b> D. Rossman	<b>Drill Crew:</b> Ramon/Fernando	
<b>Hor.-Vert. Datum:</b> NAD83	<b>Drilling Equipment:</b> CME-75	<b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in.
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> Hollow Stem Auger	
<b>Weather:</b> 64/57 Clear	<b>Exploration Diameter:</b> 8 1/4" in. O.D.	

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.50344° N Longitude: 112.07971° W Surface Condition: Dirt Trail	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>Fill: Landscape Plating</b> <b>2-4" Sandy CLAY with Subrounded Fine Gravel (CL)</b>  <b>Native:</b> <b>Clayey SAND (SC):</b> fine to medium-grained, medium plasticity, dark reddish brown, moist, no reaction with HCL, moderately firm											
			BC=6 12			18.9	74.7		97	50	32	15	
5		<b>Lean CLAY with Sand (CL):</b> medium plasticity, brown, moist, strong reaction with HCL, firm, light greyish brown lime cemented inclusions	BC=7 11 11										

The boring was terminated at approximately 6.5 ft. below ground surface. The boring was backfilled with auger cuttings on January 12, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.  
**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.



PROJECT NO.: 20162084  
 DRAWN BY: DR  
 CHECKED BY: KD  
 DATE: 2/16/2016  
 REVISED: -

**BORING LOG B-3**

Phoenix Grand Canalscape  
 CAP Canal from 15th Ave to Indian School Rd  
 & East Garfield St to East Van Buren St  
 Phoenix, AZ




PLATE

**A-5**

PAGE: 1 of 1

GINT FILE: PROJECTWISE: 20162084\_canalscape.gpj  
 GINT TEMPLATE: PROJECTWISE: KLF\_STANDARD\_GINT\_LIBRARY\_GINT\_PIT SOIL LOG

**Date Begin - End:** 1/12/2016 **Drilling Company:** Geomechanics Southwest, Inc. **BORING LOG B-4**  
**Logged By:** D. Rossman **Drill Crew:** Ramon/Fernando  
**Hor.-Vert. Datum:** NAD83 **Drilling Equipment:** CME-75 **Hammer Type - Drop:** 140 lb. Auto - 30 in.  
**Plunge:** -90 degrees **Drilling Method:** Hollow Stem Auger  
**Weather:** 64/57 Clear **Exploration Diameter:** 8 1/4" in. O.D.

Depth (feet)	Graphical Log	FIELD EXPLORATION			LABORATORY RESULTS								
		Latitude: 33.50416° N Longitude: 112.07524° W Surface Condition: Dirt Trail	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>Fill: Landscape Plating</b> <b>2-4" Sandy CLAY with Subrounded Fine Gravel (CL)</b>  <b>Native:</b> <b>Clayey SAND (SC):</b> fine to medium-grained, medium plasticity, dark brown, moist, weak reaction with HCL, soft		BC=3 4 3		SC			96	46	28	13	
5		<b>Lean CLAY with Sand (CL):</b> medium plasticity, light brown to yellowish brown, moist, strong reaction with HCL, moderately firm, light greyish brown lime cemented inclusions		BC=4 9 10									

The boring was terminated at approximately 6.5 ft. below ground surface. The boring was backfilled with auger cuttings on January 12, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.  
**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.



PROJECT NO.: 20162084  
 DRAWN BY: DR  
 CHECKED BY: KD  
 DATE: 2/16/2016  
 REVISED: -

### BORING LOG B-4

Phoenix Grand Canalscape  
 CAP Canal from 15th Ave to Indian School Rd  
 & East Garfield St to East Van Buren St  
 Phoenix, AZ

PLATE

A-6

PAGE: 1 of 1



**Date Begin - End:** 1/12/2016 **Drilling Company:** Geomechanics Southwest, Inc. **BORING LOG B-5**  
**Logged By:** D. Rossman **Drill Crew:** Ramon/Fernando  
**Hor.-Vert. Datum:** NAD83 **Drilling Equipment:** CME-75 **Hammer Type - Drop:** 140 lb. Auto - 30 in.  
**Plunge:** -90 degrees **Drilling Method:** Hollow Stem Auger  
**Weather:** 64/57 Clear **Exploration Diameter:** 8 1/4" in. O.D.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.50385° N Longitude: 112.07083° W Surface Condition: Dirt Trail	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>Fill: Landscape Plating</b> <b>2-4" Clayey SAND with Subrounded Fine Gravel (SC)</b>		BC=4 8		SC	10.0	117.9	100	38	26	9	
5		<b>Native:</b> <b>Clayey SAND (SC):</b> fine-grained, low to medium plasticity, dark reddish brwon, moist, weak reaction with HCL, soft		BC=5 6 11									
10		<b>Lean CLAY with Sand (CL):</b> medium plasticity, light brown to yellowish brown, moist, strong reaction with HCL, soft to firm, light greyish brown inclusions		BC=10 11 8									
15		dark brown, no HCL reaction, sparse small greyish brown lime cemented inclusions below 15 ft.		BC=13 26									
20		increased moisture below 20 ft.		BC=10 16 25									
25				BC=2 8									
30		<b>Clayey SAND (SC):</b> fine-grained, low plasticity, brown and light grey, moist, moderate reaction with HCL, hard		BC=20 28 29									
35		<b>Sandy Lean CLAY with Gravel (CL):</b> medium plasticity, brown, moist, no reaction with HCL, hard		BC=25 50/4"									
40		<b>Sandy Lean CLAY (CL):</b> medium plasticity, brown, moist, no reaction with HCL, hard		BC=20 18 17									
45		The boring was terminated at approximately 41.5 ft. below ground surface. The boring was backfilled with cement/water mixture on January 12, 2016.											
		<u>GROUNDWATER LEVEL INFORMATION:</u> Groundwater was not encountered during drilling or after completion. <u>GENERAL NOTES:</u> A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.											



PROJECT NO.: 20162084  
 DRAWN BY: DR  
 CHECKED BY: KD  
 DATE: 2/16/2016  
 REVISED: -

### BORING LOG B-5

Phoenix Grand Canalscape  
 CAP Canal from 15th Ave to Indian School Rd  
 & East Garfield St to East Van Buren St  
 Phoenix, AZ

PLATE

A-7

PAGE: 1 of 1

**Date Begin - End:** 1/12/2016 **Drilling Company:** Geomechanics Southwest, Inc. **BORING LOG B-5A**  
**Logged By:** D. Rossman **Drill Crew:** Ramon/Fernando  
**Hor.-Vert. Datum:** NAD83 **Drilling Equipment:** CME-75 **Hammer Type - Drop:** 140 lb. Auto - 30 in.  
**Plunge:** -90 degrees **Drilling Method:** Hollow Stem Auger  
**Weather:** 64/57 Clear **Exploration Diameter:** 8 1/4" in. O.D.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.50363° N Longitude: 112.07085° W Surface Condition: AC Pavement	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>2" ASPHALTIC CONCRETE</b>											
5		<b>Sandy Lean CLAY (CL):</b> fine to medium-grained, medium plasticity, brown, moist, strong reaction with HCL, soft to firm, light greyish brown lime cemented inclusions		BC=3 4 4									
				BC=5 10									
10		<b>Lean CLAY with Sand (CL):</b> medium plasticity, brown, moist, strong reaction with HCL, firm to hard, light greyish brown lime cemented inclusions weakly to moderately cemented, frequent light greyish brown lime cemented lenses below 10 ft.		BC=7 8 11									
				BC=18 42		12.6	111.3						
15		sparse light greyish brown lime cemented nclusions below 15 ft.		BC=13 21 30									
20		increased moisture below 20 ft.		BC=16 33		17.1	100.8						
25				BC=20 35 45									
30		<b>Silty SAND (SM):</b> fine to medium-grained, non-plastic, greyish brown, moist, dense		BC=36 42									
35		<b>Sandy Lean CLAY with Gravel (CL):</b> medium plasticity, brown, moist, no reaction with HCL, hard		BC=50/6"									
40		<b>Silty SAND (SM):</b> fine to medium-grained, non-plastic, greyish brown, moist, no reaction with HCL, dense, stratified with lean clay, CL, medium plasticity		BC=18 41									
45		<p>The boring was terminated at approximately 41 ft. below ground surface. The boring was backfilled with cement/water mixture and patched at surface on January 12, 2016.</p> <p><b>GROUNDWATER LEVEL INFORMATION:</b> Groundwater was not encountered during drilling or after completion.</p> <p><b>GENERAL NOTES:</b> A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.</p>											



PROJECT NO.: 20162084  
 DRAWN BY: DR  
 CHECKED BY: KD  
 DATE: 2/16/2016  
 REVISED: -

### BORING LOG B-5A

Phoenix Grand Canalscape  
 CAP Canal from 15th Ave to Indian School Rd  
 & East Garfield St to East Van Buren St  
 Phoenix, AZ




PLATE

A-8

PAGE: 1 of 1



<b>Date Begin - End:</b> 1/12/2016	<b>Drilling Company:</b> Geomechanics Southwest, Inc.	<b>BORING LOG B-6</b>
<b>Logged By:</b> D. Rossman	<b>Drill Crew:</b> Ramon/Fernando	
<b>Hor.-Vert. Datum:</b> NAD83	<b>Drilling Equipment:</b> CME-75	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> Hollow Stem Auger	
<b>Weather:</b> 64/57 Clear	<b>Exploration Diameter:</b> 8 1/4" in. O.D.	
		<b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.50271° N Longitude: 112.06600° W Surface Condition: AC Pavement	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>2" ASPHALTIC CONCRETE</b>											
		<b>Silty/Clayey SAND (SC-SM):</b> fine-grained, medium plasticity, dark brown, moist, no reaction with HCL, soft				SC-SM			95	40	22	6	
				BC=4 3 3									
5		<b>Lean CLAY with Sand (CL):</b> medium plasticity, dark brown, moist, strong reaction with HCL, soft, light greyish brown lime cemented inclusions		BC=5 8									

The boring was terminated at approximately 6 ft. below ground surface. The boring was backfilled with auger cuttings and patched at surface on January 12, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.  
**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.



PROJECT NO.: 20162084  
DRAWN BY: DR  
CHECKED BY: KD  
DATE: 2/16/2016  
REVISED: -

### BORING LOG B-6

Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ


PLATE

A-9

PAGE: 1 of 1

**Date Begin - End:** 1/13/2016 **Drilling Company:** Geomechanics Southwest, Inc. **BORING LOG B-7**  
**Logged By:** D. Rossman **Drill Crew:** Ramon/Fernando  
**Hor.-Vert. Datum:** NAD83 **Drilling Equipment:** CME-75 **Hammer Type - Drop:** 140 lb. Auto - 30 in.  
**Plunge:** -90 degrees **Drilling Method:** Hollow Stem Auger  
**Weather:** 66/39 Clear **Exploration Diameter:** 8 1/4" in. O.D.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.50196° N Longitude: 112.06068° W Surface Condition: Dirt Trail	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>Fill: Landscape Plating</b> <b>2-4" Clayey SAND with Subrounded Fine Gravel (SC)</b>		BC=9 9		SC			100	47	32	16	
5		<b>Native:</b> <b>Clayey SAND (SC):</b> medium plasticity, brown, moist, weak reaction with HCL, moderately firm		BC=7 12			13.6	105.1					
		<b>Sandy Lean CLAY (CL):</b> medium plasticity, brown, moist, strong reaction with HCL, firm, light greyish brown lime cemented inclusions		BC=6 9 10									
10				BC=6 15 16									
15				BC=13 25									
20		weak HCL reaction, trace sub-angular gravel, interbedded with clayey sand SC below 20 ft.		BC=10 11 12									
25		<b>Lean CLAY with Sand (CL):</b> medium plasticity, brown, moist, strong reaction with HCL, moderately firm to hard, light greyish brown lime cemented inclusions		BC=30 50/5"									
30		decreased sand, no inclusions below 30 ft.		BC=21 50/4"									
35				BC=10 50/5"									
40		increased moisture, no HCL reaction below 40 ft.		BC=3 6 6									
45		The boring was terminated at approximately 41.5 ft. below ground surface. The boring was backfilled with cement/water mixture on January 13, 2016.											
		<b>GROUNDWATER LEVEL INFORMATION:</b> Groundwater was not encountered during drilling or after completion. <b>GENERAL NOTES:</b> A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.											


 <p><b>KLEINFELDER</b> Bright People. Right Solutions.</p>	PROJECT NO.: 20162084 DRAWN BY: DR CHECKED BY: KD DATE: 2/16/2016 REVISED: -	<b>BORING LOG B-7</b>  Phoenix Grand Canalscape CAP Canal from 15th Ave to Indian School Rd & East Garfield St to East Van Buren St Phoenix, AZ	PLATE  <b>A-10</b>
			PAGE: 1 of 1

PLOTTED: 02/22/2016 11:28 AM BY: drossman

Date Begin - End:	1/13/2016	Drilling Company:	Geomechanics Southwest, Inc.	BORING LOG B-7A		
Logged By:	D. Rossman	Drill Crew:	Ramon/Fernando			
Hor.-Vert. Datum:	NAD83	Drilling Equipment:	CME-75		Hammer Type - Drop:	140 lb. Auto - 30 in.
Plunge:	-90 degrees	Drilling Method:	Hollow Stem Auger			
Weather:	66/39 Clear	Exploration Diameter:	8 1/4" in. O.D.			

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.50173° N Longitude: 112.06071° W Surface Condition: AC Pavement	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		2" ASPHALTIC CONCRETE											
		Clayey SAND with Gravel (SC): fine to coarse-grained, medium plasticity, light brown, slightly moist, firm, subrounded gravel		BC=5 6 6									
5		Lean CLAY with Sand (CL): fine-grained, medium plasticity, light brown, moist, strong reaction with HCL, moderately firm, light greyish brown lime cemented inclusions		BC=4 5									
		Sandy Lean CLAY (CL): fine-grained, low to medium plasticity, light brown, moist, moderate reaction with HCL, soft		BC=3 6 8									
10		Lean CLAY with Sand (CL): medium plasticity, brown, moist, strong reaction with HCL, moderately firm, light greyish brown lime cemented inclusions		BC=12 16			10.0	105.9					
		Sandy Lean CLAY (CL): fine-grained, low to medium plasticity, brown, moist, moderate reaction with HCL, firm		BC=13 17 32									
15		Lean CLAY with Sand (CL): medium plasticity, brown, moist, strong reaction with HCL, very firm to hard, light greyish brown lime cemented inclusions											
20		1" gravel in bottom of sampler		BC=19 31									
25				BC=20 31 50/4"									
30		decreased light greyish brown inclusions below 30 ft.		BC=37 50/3"									
35				BC=29 50/3"									
40				BC=5 22									
45		The boring was terminated at approximately 41 ft. below ground surface. The boring was backfilled with cement/water mixture and patched at surface on January 13, 2016.				GROUNDWATER LEVEL INFORMATION: Groundwater was not encountered during drilling or after completion. GENERAL NOTES: A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.							

GROUNDWATER LEVEL INFORMATION:  
Groundwater was not encountered during drilling or after completion.  
GENERAL NOTES:  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.

 <b>KLEINFELDER</b> Bright People. Right Solutions.	PROJECT NO.: 20162084	BORING LOG B-7A	PLATE
	DRAWN BY: DR		
	CHECKED BY: KD	Phoenix Grand Canalscape CAP Canal from 15th Ave to Indian School Rd & East Garfield St to East Van Buren St Phoenix, AZ	A-11
	DATE: 2/16/2016		
	REVISED: -		
			PAGE: 1 of 1

GINT FILE: PROJECTWISE: 20162084\_canalscape.gpj  
GINT TEMPLATE: PROJECTWISE: KLF\_STANDARD\_GINT\_LIBRARY\_2016.GLB [KLF\_BORING/TEST PIT SOIL LOG]

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<b>Date Begin - End:</b> 1/13/2016	<b>Drilling Company:</b> Geomechanics Southwest, Inc.	<b>BORING LOG B-9</b>
<b>Logged By:</b> D. Rossman	<b>Drill Crew:</b> Ramon/Fernando	
<b>Hor.-Vert. Datum:</b> NAD83	<b>Drilling Equipment:</b> CME-75	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> Hollow Stem Auger	
<b>Weather:</b> 66/39 Clear	<b>Exploration Diameter:</b> 8 1/4" in. O.D.	
		<b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.49804° N Longitude: 112.05294° W Surface Condition: Dirt Trail	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div>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The boring was terminated at approximately 6 ft. below ground surface. The boring was backfilled with auger cuttings on January 13, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.  
**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.



PROJECT NO.: 20162084  
DRAWN BY: DR  
CHECKED BY: KD  
DATE: 2/16/2016  
REVISED: -

### BORING LOG B-9

Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ

PLATE

A-13

PAGE: 1 of 1

<b>Date Begin - End:</b> 1/13/2016	<b>Drilling Company:</b> Geomechanics Southwest, Inc.	<b>BORING LOG B-10</b>
<b>Logged By:</b> D. Rossman	<b>Drill Crew:</b> Ramon/Fernando	
<b>Hor.-Vert. Datum:</b> NAD83	<b>Drilling Equipment:</b> CME-75	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> Hollow Stem Auger	
<b>Weather:</b> 66/39 Clear	<b>Exploration Diameter:</b> 8 1/4" in. O.D.	
		<b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.49566° N Longitude: 112.04971° W Surface Condition: Dirt Trail	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
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The boring was terminated at approximately 6.5 ft. below ground surface. The boring was backfilled with auger cuttings on January 13, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.

**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.



PROJECT NO.: 20162084  
DRAWN BY: DR  
CHECKED BY: KD  
DATE: 2/16/2016  
REVISED: -

### BORING LOG B-10

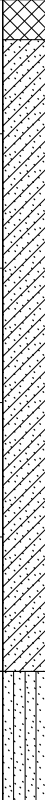
Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ

PLATE

A-14

PAGE: 1 of 1

<b>Date Begin - End:</b> 1/13/2016	<b>Drilling Company:</b> Geomechanics Southwest, Inc.	<b>BORING LOG B-11</b>
<b>Logged By:</b> D. Rossman	<b>Drill Crew:</b> Ramon/Fernando	
<b>Hor.-Vert. Datum:</b> NAD83	<b>Drilling Equipment:</b> CME-75	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> Hollow Stem Auger	
<b>Weather:</b> 66/39 Clear	<b>Exploration Diameter:</b> 8 1/4" in. O.D.	
		<b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.45572° N Longitude: 112.00234° W Surface Condition: AC Pavement	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>Fill: Landscape Plating</b> <b>2-4" Clayey SAND with Subrounded Fine Gravel (SC)</b>  <b>Native:</b> <b>Clayey SAND (SC):</b> fine to medium-grained, medium plasticity, brown, moist, moderate reaction with HCL, moderately firm, light greyish brown lime cemented inclusions   											

The boring was terminated at approximately 6 ft. below ground surface. The boring was backfilled with auger cuttings and patched at surface on January 13, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.  
**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.



PROJECT NO.: 20162084  
DRAWN BY: DR  
CHECKED BY: KD  
DATE: 2/16/2016  
REVISED: -

### BORING LOG B-11





Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ

PLATE

A-15

PAGE: 1 of 1

<b>Date Begin - End:</b> 1/13/2016	<b>Drilling Company:</b> Geomechanics Southwest, Inc.	<b>BORING LOG B-12</b>
<b>Logged By:</b> D. Rossman	<b>Drill Crew:</b> Ramon/Fernando	
<b>Hor.-Vert. Datum:</b> NAD83	<b>Drilling Equipment:</b> CME-75	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> Hollow Stem Auger	
<b>Weather:</b> 66/39 Clear	<b>Exploration Diameter:</b> 8 1/4" in. O.D.	
		<b>Hammer Type - Drop:</b> 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION				LABORATORY RESULTS							
		Latitude: 33.45302° N Longitude: 111.99841° W Surface Condition: AC Pavement	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Lithologic Description											
		<b>Fill: Landscape Plating</b> <b>2-4" Clayey SAND with Subrounded Fine Gravel (SC)</b>  <b>Native:</b> <b>Sandy Lean CLAY (CL):</b> fine-grained, medium plasticity, brown, moist, soft											Boring drilled in dirt area immediately adjacent to asphalt paved path
		<b>Silty SAND (SM):</b> fine-grained, non-plastic, dark brown, moist, no reaction with HCL, very loose		BC=3 4		SM	10.3	103.1	96	46	23	3	
5				BC=1 2 1									

The boring was terminated at approximately 6.5 ft. below ground surface. The boring was backfilled with auger cuttings on January 13, 2016.

**GROUNDWATER LEVEL INFORMATION:**  
Groundwater was not encountered during drilling or after completion.

**GENERAL NOTES:**  
A Garmin eTrex-20 GPS unit was used to locate the exploration with an accuracy of 10 feet.



PROJECT NO.: 20162084  
DRAWN BY: DR  
CHECKED BY: KD  
DATE: 2/16/2016  
REVISED: -

### BORING LOG B-12

Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ

PLATE

A-16

PAGE: 1 of 1



**APPENDIX B**  
**Laboratory Testing**

Exploration ID	Depth (ft.)	Sample Description	Water Content (%)	Dry Unit Wt. (pcf)	Sieve Analysis (%)			Atterberg Limits			Additional Tests
					Passing 3/4"	Passing #4	Passing #200	Liquid Limit	Plastic Limit	Plasticity Index	
B-1	0.5	SANDY LEAN CLAY (CL)				97	51	33	15	18	
B-1	2.0		14.0	96.9							
B-2	0.5	CLAYEY SAND (SC)				97	50	30	16	14	
B-3	0.5	CLAYEY SAND (SC)			100	97	50	32	17	15	
B-3	2.0		18.9	74.7							
B-4	0.5	CLAYEY SAND (SC)				96	46	28	15	13	
B-5	0.5	CLAYEY SAND (SC)				100	38	26	17	9	
B-5	2.0		10.0	117.9							
B-5A	10.0		12.6	111.3							
B-5A	20.0		17.1	100.8							
B-6	0.5	SILTY, CLAYEY SAND (SC-SM)			96	95	40	22	16	6	
B-7	0.5	CLAYEY SAND (SC)				100	47	32	16	16	
B-7	5.0		13.6	105.1							
B-7A	10.0		10.0	105.9							
B-8	2.0		6.8	100.4							
B-9	0.5	SANDY LEAN CLAY (CL)				100	50	27	16	11	
B-10	2.0		22.5	94.2							
B-11	0.5	CLAYEY SAND (SC)				93	37	27	18	9	
B-12	2.0	SILTY SAND (SM)	10.3	103.1		96	46	23	20	3	

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.  
NP = NonPlastic



PROJECT NO.: 20162084

DRAWN BY:

CHECKED BY:

DATE:

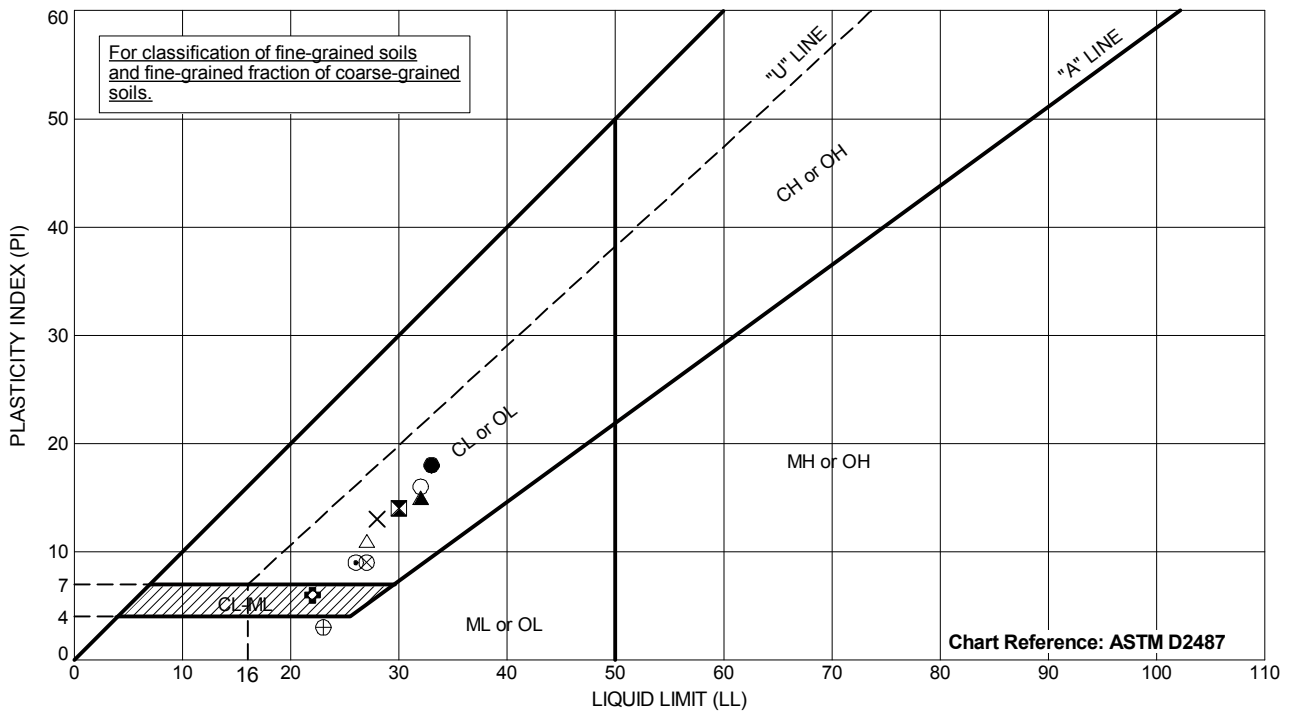
REVISED:

### LABORATORY TEST RESULT SUMMARY

Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ

TABLE

B-1



Exploration ID	Depth (ft.)	Sample Description	Passing #200	LL	PL	PI
● B-1	0.5 - 5	SANDY LEAN CLAY (CL)	51	33	15	18
▣ B-2	0.5 - 5	CLAYEY SAND (SC)	50	30	16	14
▲ B-3	0.5 - 5	CLAYEY SAND (SC)	50	32	17	15
✕ B-4	0.5 - 5	CLAYEY SAND (SC)	46	28	15	13
⊙ B-5	0.5 - 5	CLAYEY SAND (SC)	38	26	17	9
⊕ B-6	0.5	SILTY, CLAYEY SAND (SC-SM)	40	22	16	6
○ B-7	0.5	CLAYEY SAND (SC)	47	32	16	16
△ B-9	0.5	SANDY LEAN CLAY (CL)	50	27	16	11
⊗ B-11	0.5	CLAYEY SAND (SC)	37	27	18	9
⊕ B-12	2	SILTY SAND (SM)	46	23	20	3

Testing performed in general accordance with ASTM D4318.  
 NP = Nonplastic  
 NM = Not Measured



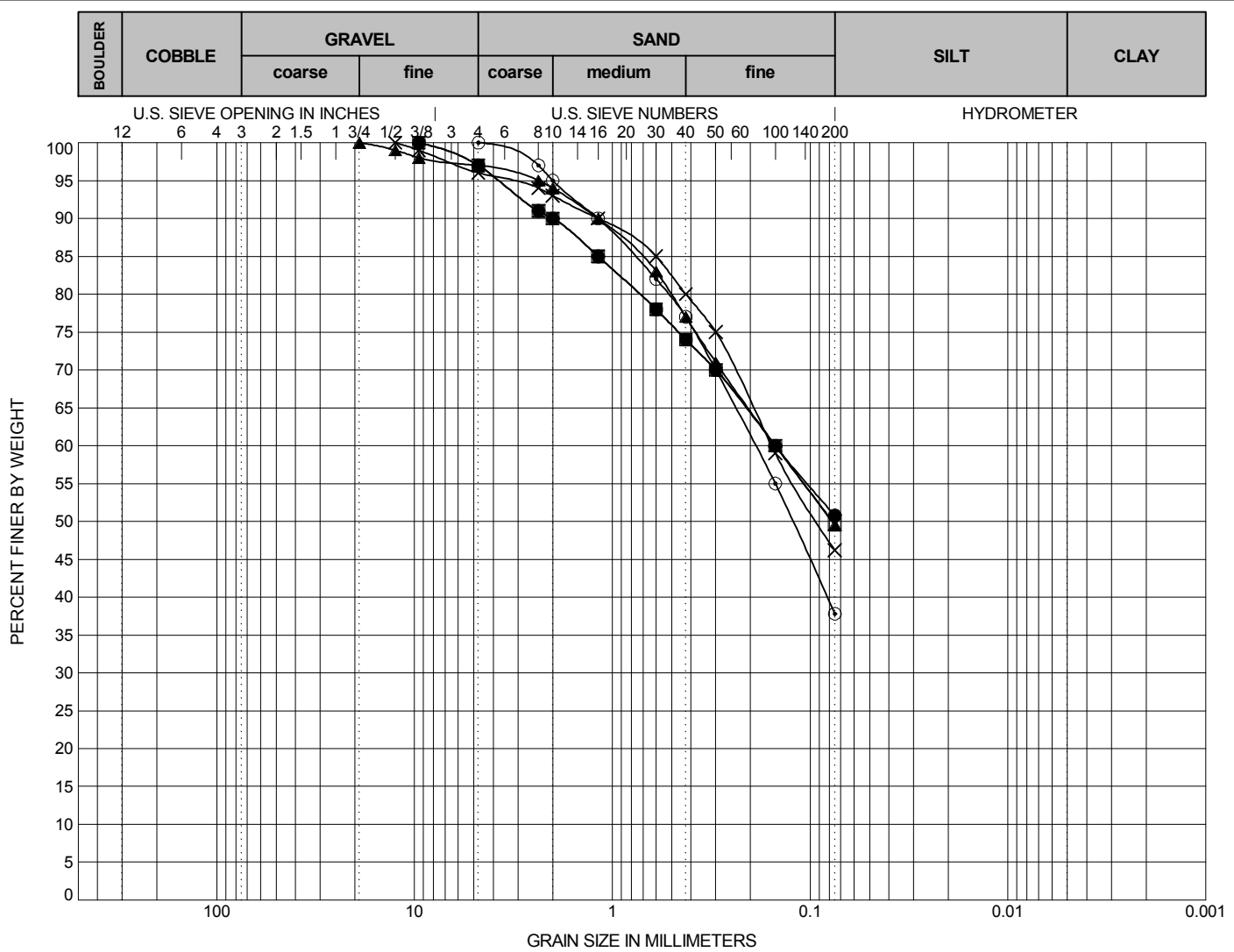
PROJECT NO.: 20162084  
 DRAWN BY: DR  
 CHECKED BY: KD  
 DATE: 2/16/2016  
 REVISED: -

**ATTERBERG LIMITS**

Phoenix Grand Canalscape  
 CAP Canal from 15th Ave to Indian School Rd  
 & East Garfield St to East Van Buren St  
 Phoenix, AZ

**PLATE**

**B-2**



Exploration ID	Depth (ft.)	Sample Description	LL	PL	PI
● B-1	0.5 - 5	SANDY LEAN CLAY (CL)	33	15	18
☒ B-2	0.5	CLAYEY SAND (SC)	30	16	14
▲ B-3	0.5 - 5	CLAYEY SAND (SC)	32	17	15
✕ B-4	0.5 - 5	CLAYEY SAND (SC)	28	15	13
⊙ B-5	0.5 - 5	CLAYEY SAND (SC)	26	17	9

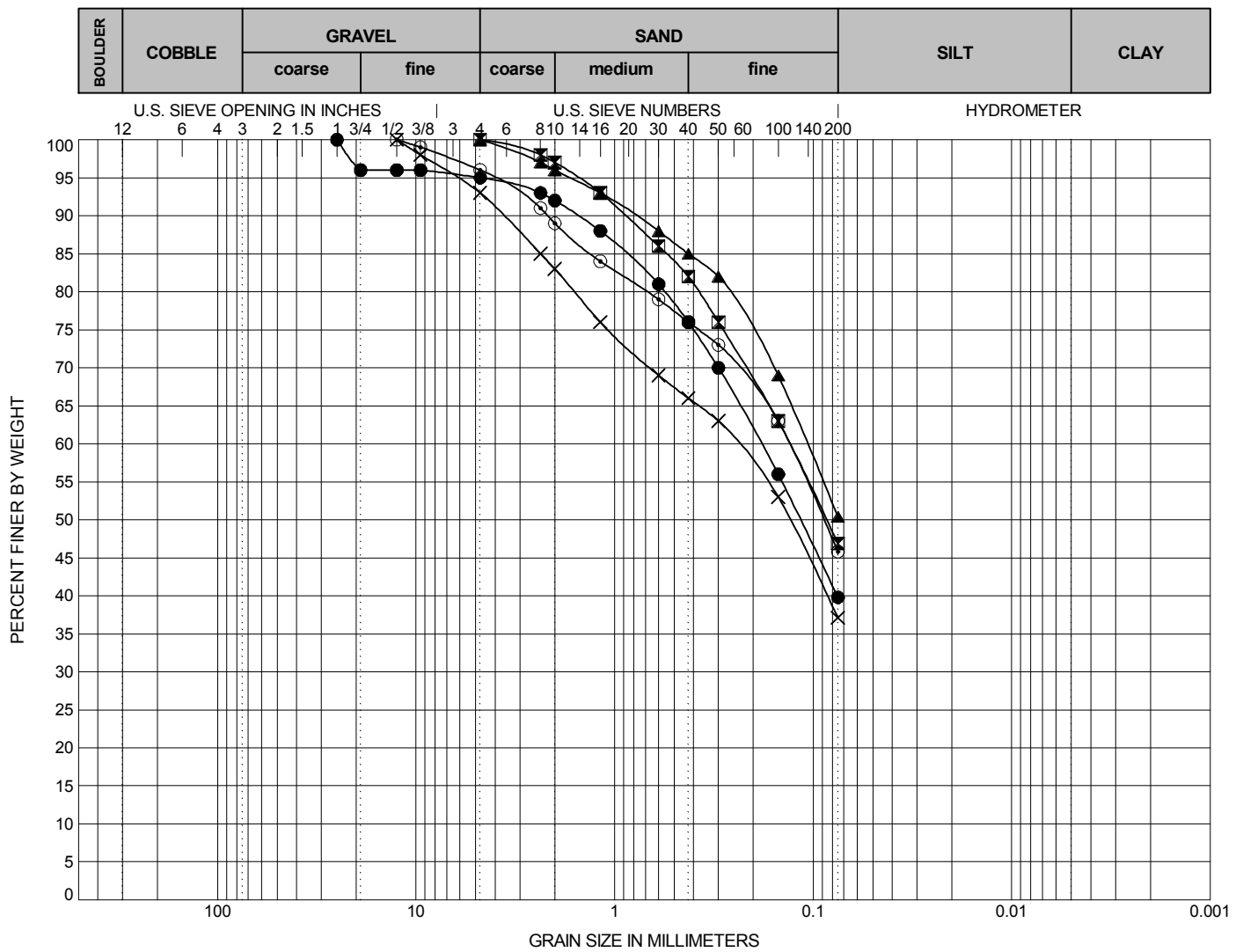
  

Exploration ID	Depth (ft.)	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
● B-1	0.5 - 5	9.5	0.15	NM	NM	NM	NM		97	51	NM	NM
☒ B-2	0.5	9.5	0.15	NM	NM	NM	NM		97	50	NM	NM
▲ B-3	0.5 - 5	19	0.15	NM	NM	NM	NM	100	97	50	NM	NM
✕ B-4	0.5 - 5	12.5	0.157	NM	NM	NM	NM		96	46	NM	NM
⊙ B-5	0.5 - 5	4.75	0.189	NM	NM	NM	NM		100	38	NM	NM

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D422.  
 NP = Nonplastic  
 NM = Not Measured

Coefficients of Uniformity -  $C_u = D_{60} / D_{10}$   
 Coefficients of Curvature -  $C_c = (D_{30})^2 / D_{60} D_{10}$   
 $D_{60}$  = Grain diameter at 60% passing  
 $D_{30}$  = Grain diameter at 30% passing  
 $D_{10}$  = Grain diameter at 10% passing

<p><b>KLEINFELDER</b> Bright People. Right Solutions.</p>	PROJECT NO.: 20162084	SIEVE ANALYSIS	PLATE
	DRAWN BY: DR		
	CHECKED BY: KD	Phoenix Grand Canalscape CAP Canal from 15th Ave to Indian School Rd & East Garfield St to East Van Buren St Phoenix, AZ	B-3
	DATE: 2/16/2016		
	REVISED: -		



Exploration ID	Depth (ft.)	Sample Description	LL	PL	PI
● B-6	0.5	SILTY, CLAYEY SAND (SC-SM)	22	16	6
☒ B-7	0.5	CLAYEY SAND (SC)	32	16	16
▲ B-9	0.5	SANDY LEAN CLAY (CL)	27	16	11
✕ B-11	0.5	CLAYEY SAND (SC)	27	18	9
⊙ B-12	2	SILTY SAND (SM)	23	20	3

Exploration ID	Depth (ft.)	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
● B-6	0.5	25	0.183	NM	NM	NM	NM	96	95	40	NM	NM
☒ B-7	0.5	4.75	0.132	NM	NM	NM	NM		100	47	NM	NM
▲ B-9	0.5	4.75	0.107	NM	NM	NM	NM		100	50	NM	NM
✕ B-11	0.5	12.5	0.244	NM	NM	NM	NM		93	37	NM	NM
⊙ B-12	2	12.5	0.133	NM	NM	NM	NM		96	46	NM	NM

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D422.

NP = Nonplastic  
NM = Not Measured

Coefficients of Uniformity -  $C_u = D_{60} / D_{10}$

Coefficients of Curvature -  $C_c = (D_{30})^2 / D_{60} D_{10}$

D<sub>60</sub> = Grain diameter at 60% passing

D<sub>30</sub> = Grain diameter at 30% passing

D<sub>10</sub> = Grain diameter at 10% passing



PROJECT NO.: 20162084

DRAWN BY: DR

CHECKED BY: KD

DATE: 2/16/2016

REVISED: -

## SIEVE ANALYSIS

Phoenix Grand Canalscape  
CAP Canal from 15th Ave to Indian School Rd  
& East Garfield St to East Van Buren St  
Phoenix, AZ

PLATE

B-4

SAMPLE SOURCE: **B3 @ 0.5-5.0'**

Moisture Content (%): 11.9  
Dry Density (pcf): 110.0  
Degree of Saturation (%): 62.6

SPECIFIC GRAVITY: 2.65 (estimated)

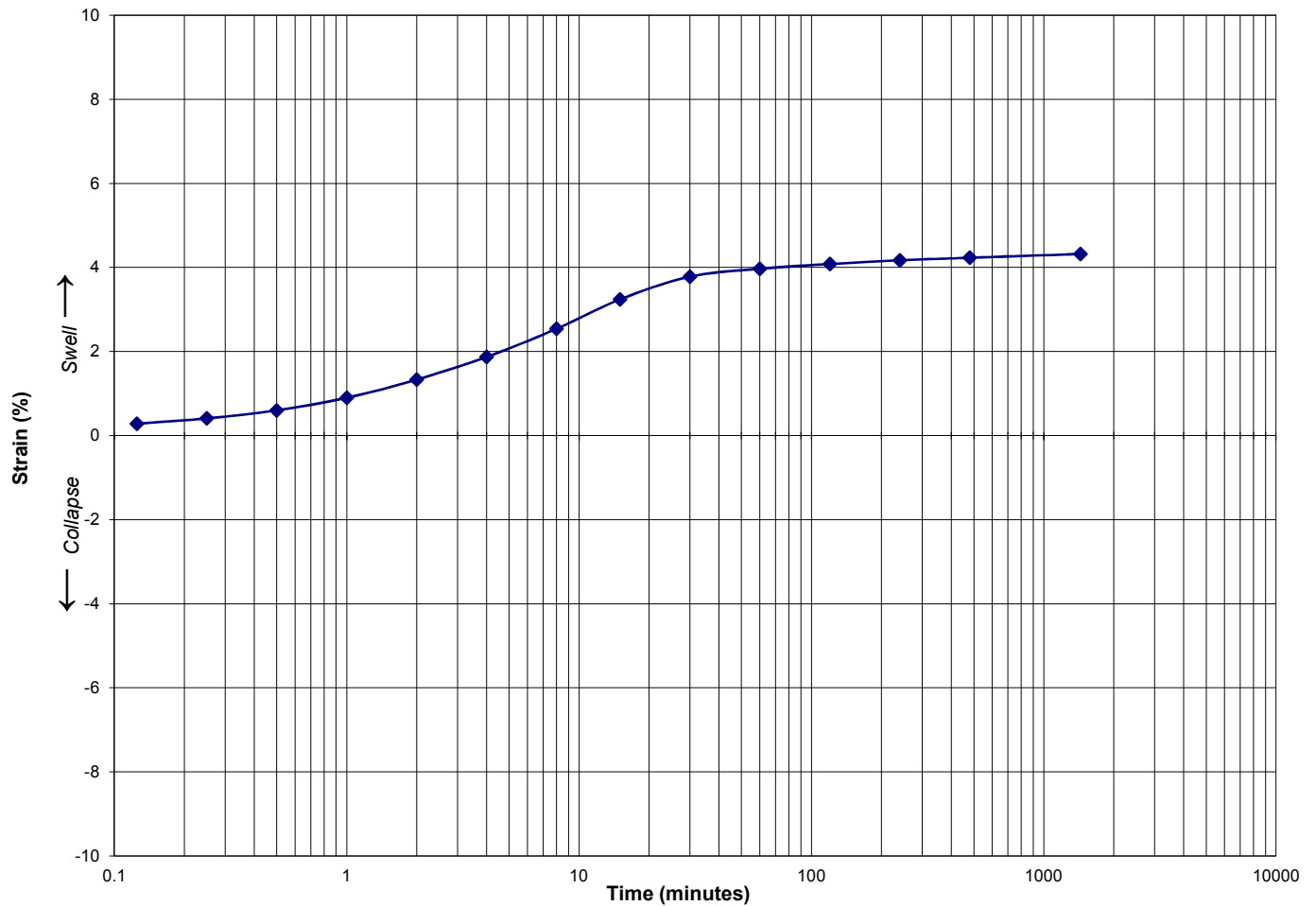
Maximum Dry Density (pcf): 115.8  
Optimum Moisture (%): 13.9

APPLIED STRESS: 100 psf

SEATING PRESSURE: 100 psf

TEST PREPARATION: Specimen remolded to approximately 95% of maximum dry density at approximately 2% below optimum moisture, as determined by a standard proctor (ASTM D698).

### 4.3% Swell



#### ONE-DIMENSIONAL FREE SWELL (ASTM D 4546)

Phoenix Grand Canalscape  
15th Ave to Indian School Rd & E Garfield St to E Van Buren St  
Phoenix, AZ

PLATE

**B5**

Report Date:  
February 2016

Project Number:  
20162084

OK1414-



SAMPLE SOURCE: **B5 @ 0.5-5.0'**

Moisture Content (%): 10.5  
Dry Density (pcf): 114.7  
Degree of Saturation (%): 63.0

SPECIFIC GRAVITY: 2.65 (estimated)

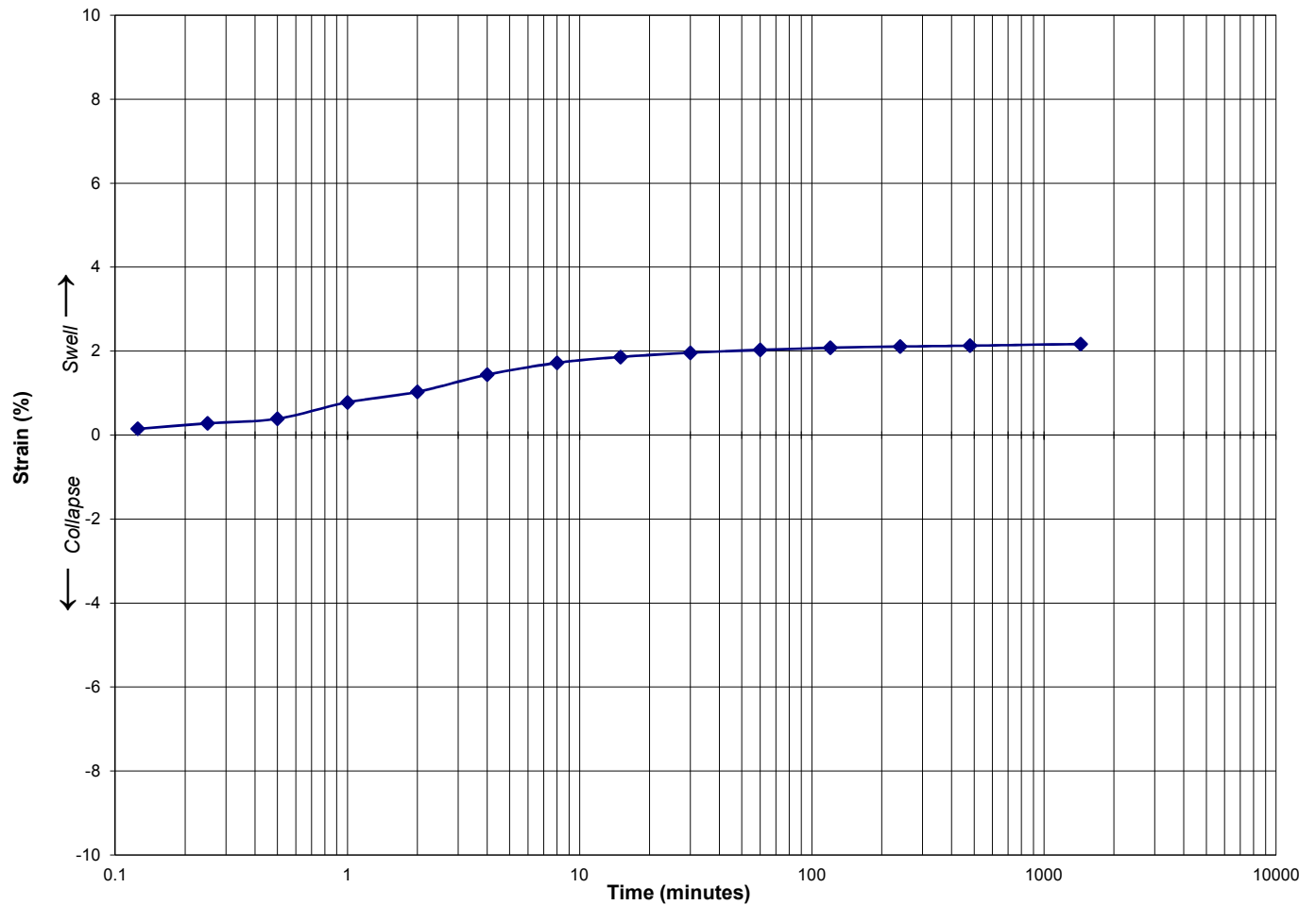
Maximum Dry Density (pcf): 120.6  
Optimum Moisture (%): 12.6

APPLIED STRESS: 100 psf

SEATING PRESSURE: 100 psf

TEST PREPARATION: Specimen remolded to approximately 95% of maximum dry density at approximately 2% below optimum moisture, as determined by a standard proctor (ASTM D698).

### 2.2% Swell



#### ONE-DIMENSIONAL FREE SWELL (ASTM D 4546)

Phoenix Grand Canalscape  
15th Ave to Indian School Rd & E Garfield St to E Van Buren St  
Phoenix, AZ

PLATE

**B6**

Report Date:  
February 2016

Project Number:  
20162084

OK1416-

SAMPLE SOURCE: **B7 @ 0.5-5.0'**

Moisture Content (%): 10.8  
Dry Density (pcf): 111.3  
Degree of Saturation (%): 58.6

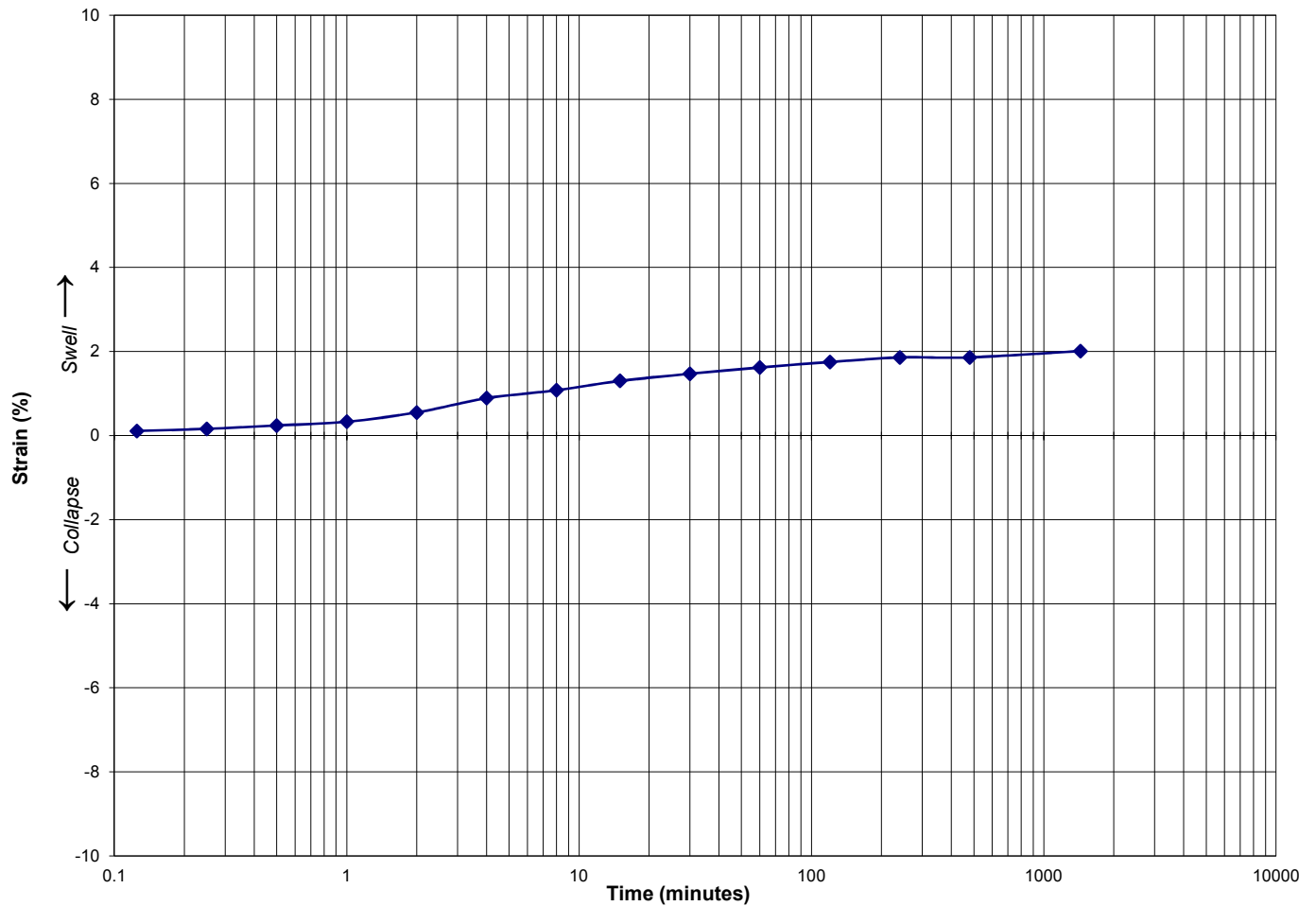
SPECIFIC GRAVITY: 2.65 (estimated)

Maximum Dry Density (pcf): 117.1  
Optimum Moisture (%): 12.8

APPLIED STRESS: 100 psf  
SEATING PRESSURE: 100 psf

TEST PREPARATION: Specimen remolded to approximately 95% of maximum dry density at approximately 2% below optimum moisture, as determined by a standard proctor (ASTM D698).

### 2% Swell



#### ONE-DIMENSIONAL FREE SWELL (ASTM D 4546)

Phoenix Grand Canalscape  
15th Ave to Indian School Rd & E Garfield St to E Van Buren St  
Phoenix, AZ

PLATE

**B7**

Report Date:  
February 2016

Project Number:  
20162084

OK1420-

SAMPLE SOURCE: **B9 @ 0.5-5.0'**

Moisture Content (%): 10.6  
Dry Density (pcf): 112.1  
Degree of Saturation (%): 59.0

SPECIFIC GRAVITY: 2.65 (estimated)

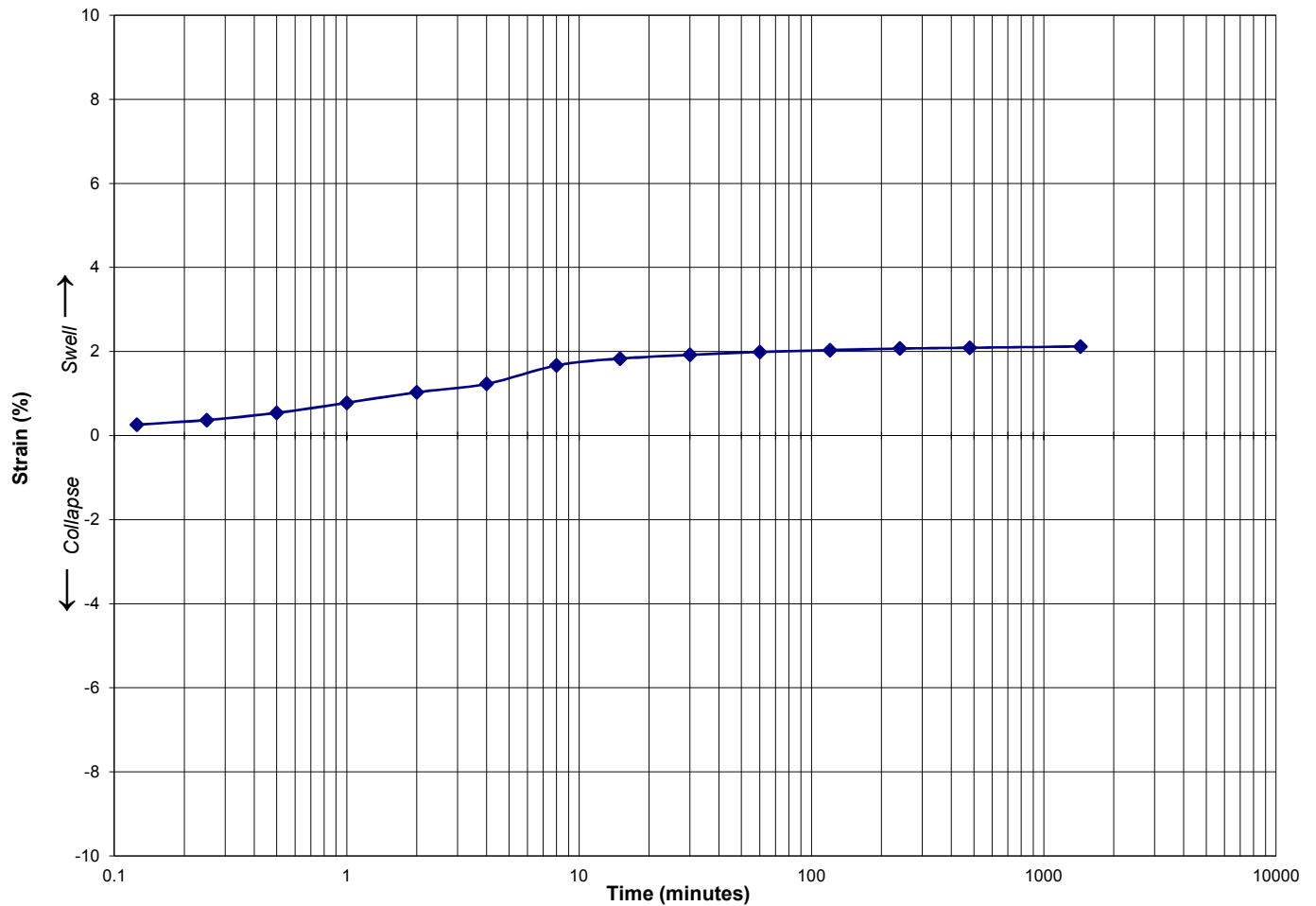
Maximum Dry Density (pcf): 118.0  
Optimum Moisture (%): 12.6

APPLIED STRESS: 100 psf

SEATING PRESSURE: 100 psf

TEST PREPARATION: Specimen remolded to approximately 95% of maximum dry density at approximately 2% below optimum moisture, as determined by a standard proctor (ASTM D698).

### 2.1% Swell



#### ONE-DIMENSIONAL FREE SWELL (ASTM D 4546)

Phoenix Grand Canalscape  
15th Ave to Indian School Rd & E Garfield St to E Van Buren St  
Phoenix, AZ

PLATE

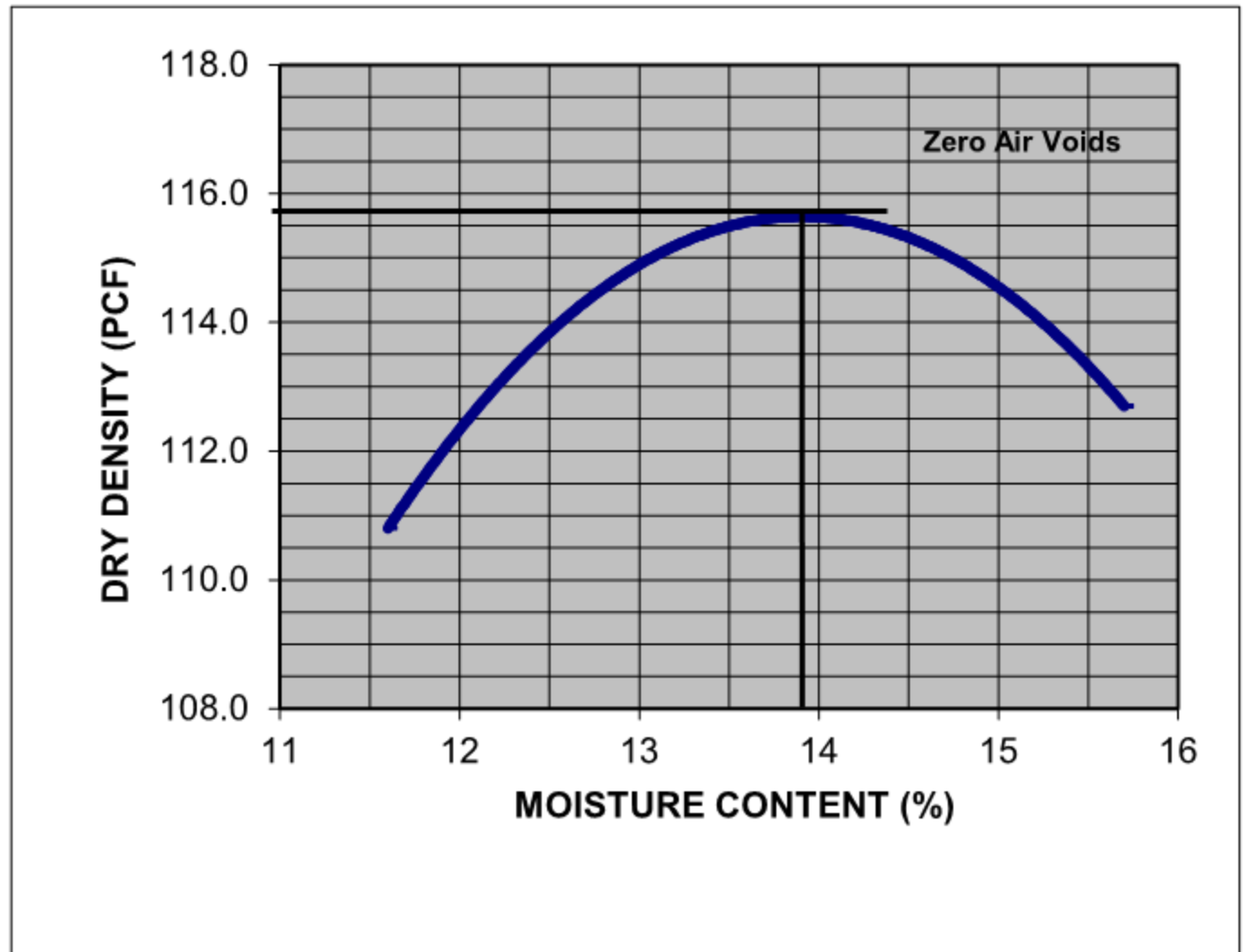
**B8**

Report Date:  
February 2016

Project Number:  
20162084

OK1424-

SAMPLE SOURCE: **B3 @ 0.5-5.0'**



ASTM D 698	
Moisture Density (Proctor)	
Max. Dry Density	115.8
Opt Moisture %	13.9
% Rock > #4	3.0

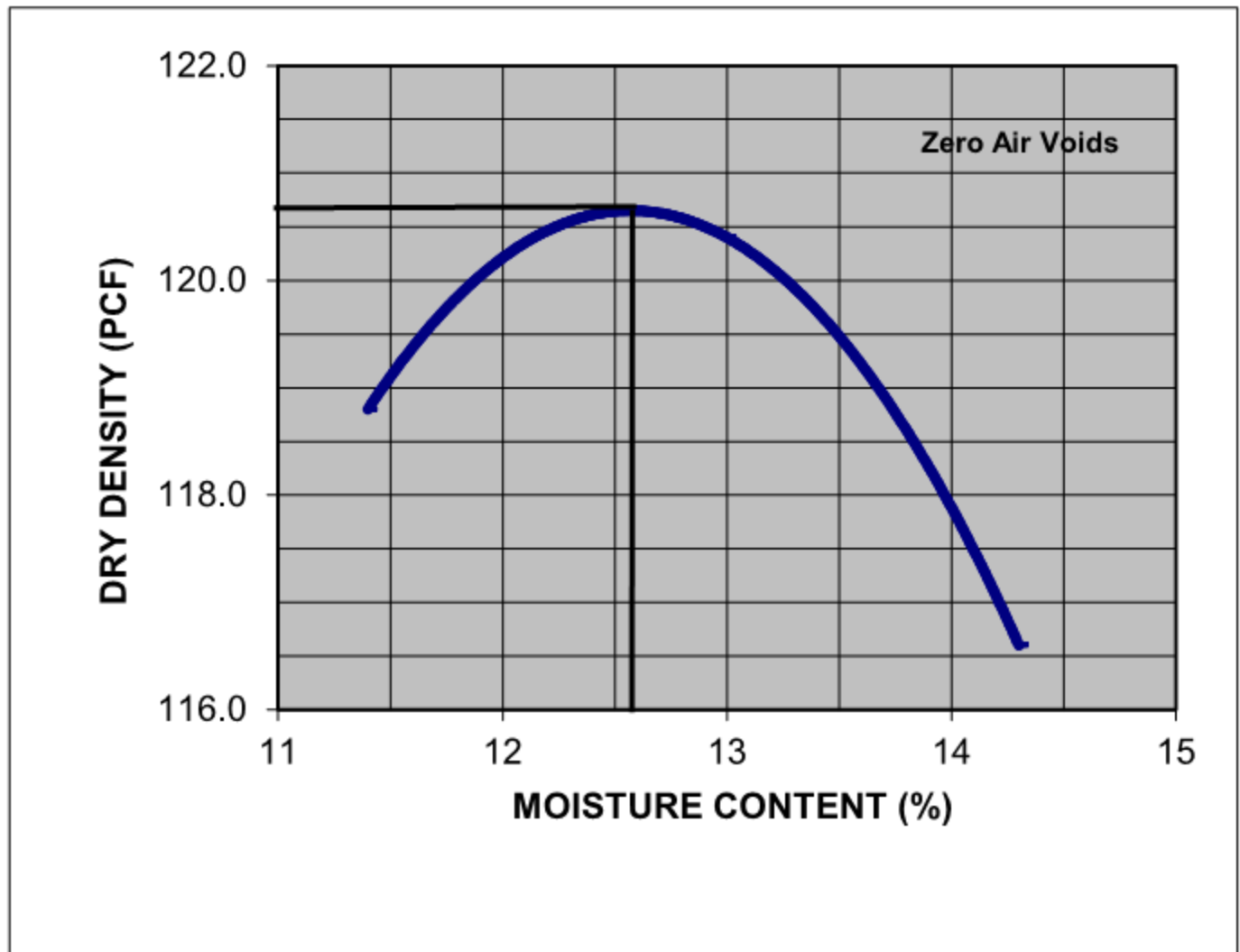


**STANDARD PROCTOR COMPACTION (ASTM D 698)**  
 Phoenix Grand Canalscape  
 15th Ave to Indian School Rd & E Garfield St to E Van Buren St  
 Phoenix, AZ

PLATE  
**B9**

Report Date: February 2016	Project Number: 20162084
-------------------------------	-----------------------------

SAMPLE SOURCE: B5 @ 0.5-5.0'



ASTM D 698	
Moisture Density (Proctor)	
Max. Dry Density	120.6
Opt Moisture %	12.6
% Rock > #4	0.0



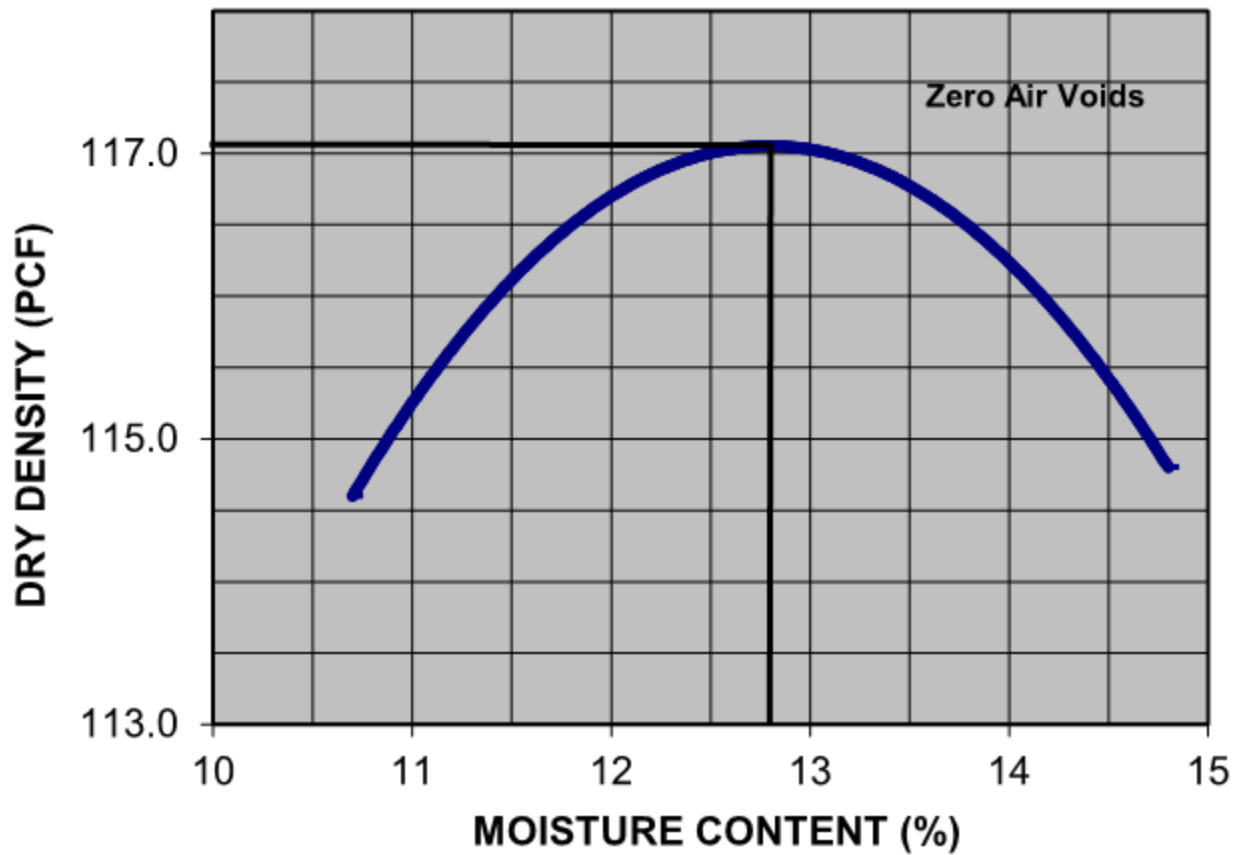
Report Date:  
February 2016

Project Number:  
20162084

**STANDARD PROCTOR COMPACTION (ASTM D 698)**  
Phoenix Grand Canalscape  
15th Ave to Indian School Rd & E Garfield St to E Van Buren St  
Phoenix, AZ

PLATE  
**B10**

SAMPLE SOURCE: B7 @ 0.5-5.0'



ASTM D 698	
Moisture Density (Proctor)	
Max. Dry Density	117.1
Opt Moisture %	12.8
% Rock > #4	0.0



Report Date:  
February 2016

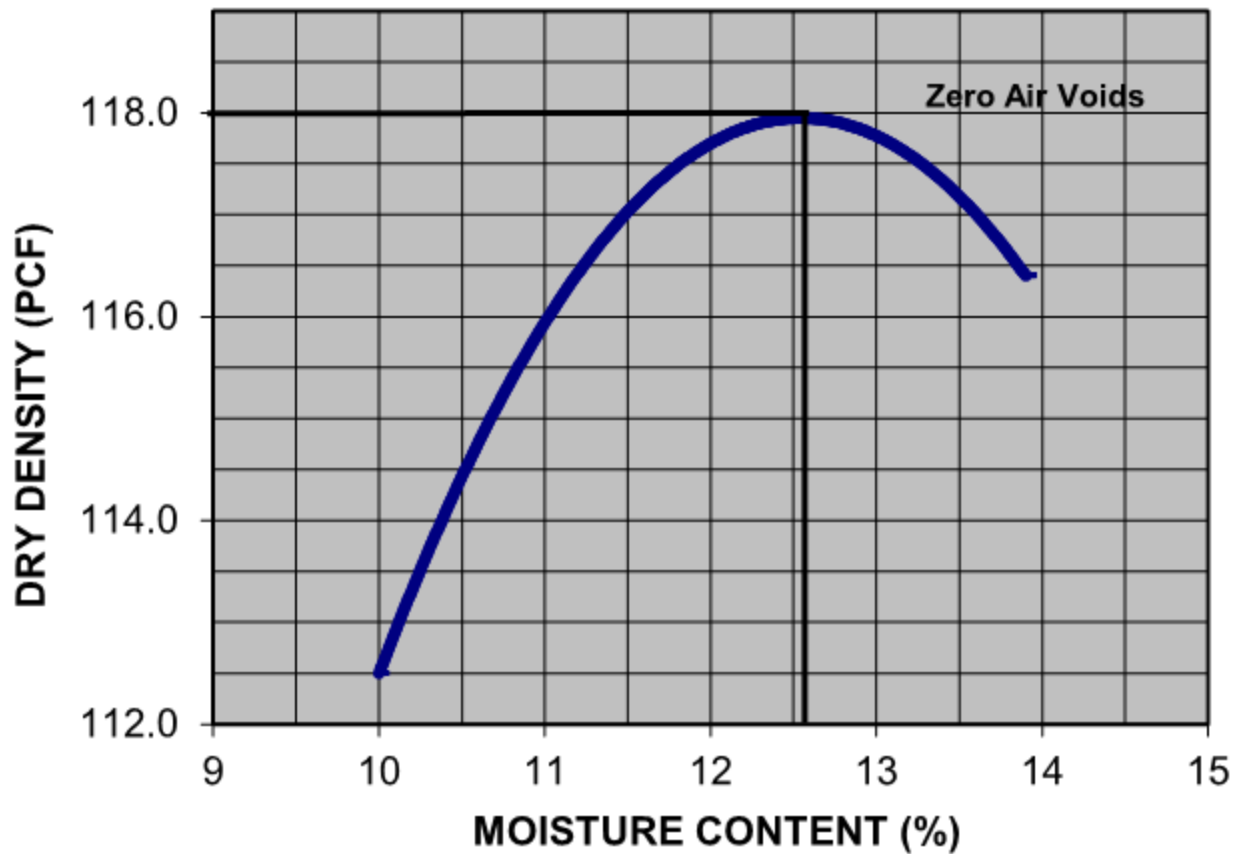
Project Number:  
20162084

**STANDARD PROCTOR COMPACTION (ASTM D 698)**  
Phoenix Grand Canalscape  
15th Ave to Indian School Rd & E Garfield St to E Van Buren St  
Phoenix, AZ

PLATE  
**B11**



SAMPLE SOURCE: B9 @ 0.5-5.0'



ASTM D 698	
Moisture Density (Proctor)	
Max. Dry Density	118.0
Opt Moisture %	12.6
% Rock > #4	0.0



Report Date:  
February 2016

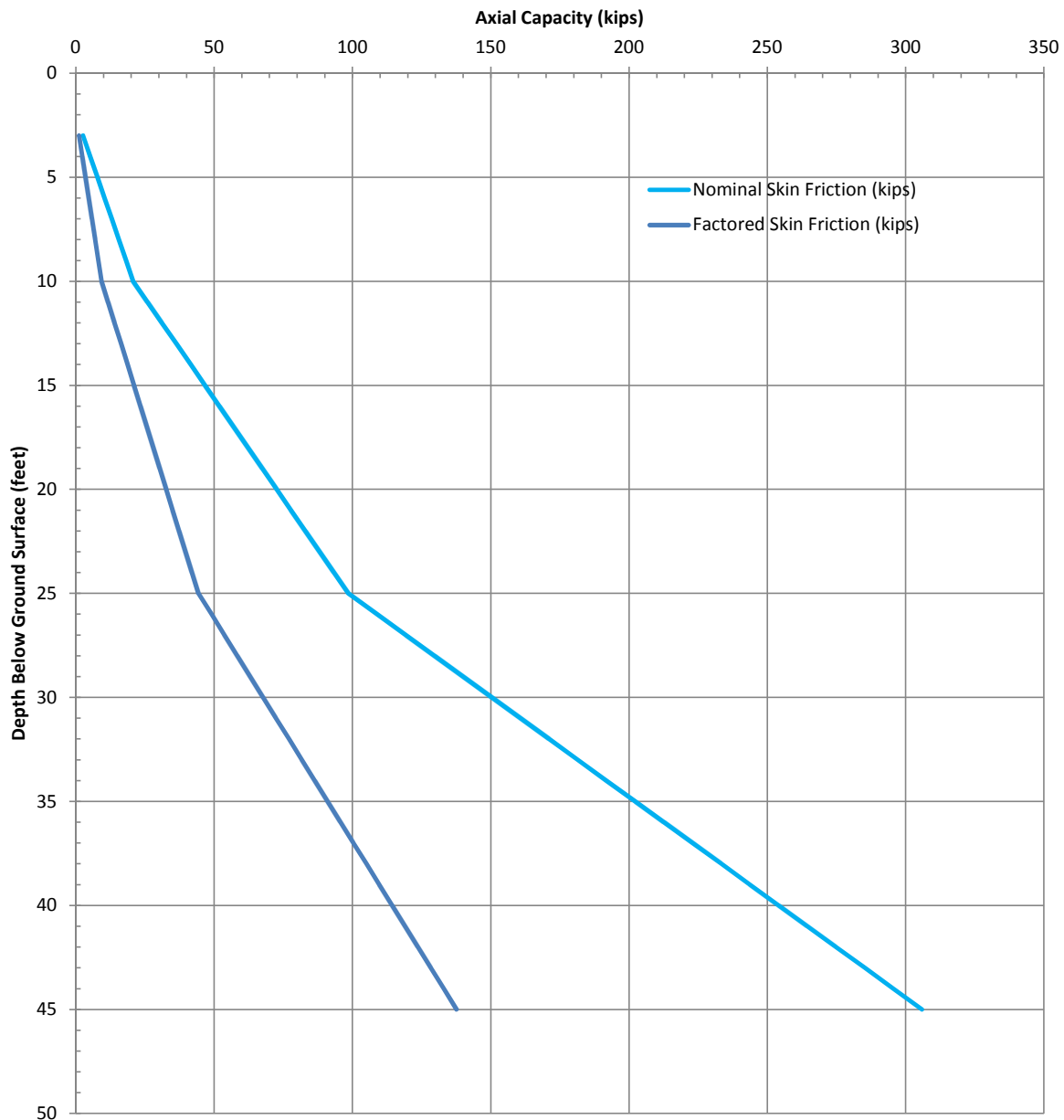
Project Number:  
20162084

**STANDARD PROCTOR COMPACTION (ASTM D 698)**  
Phoenix Grand Canalscape  
15th Ave to Indian School Rd & E Garfield St to E Van Buren St  
Phoenix, AZ

PLATE  
**B12**

## **APPENDIX C**

### **Design Charts**



Notes:

1. Axial capacities of drilled piers with diameters other than one foot may be obtained by multiplying the unit capacity by the diameter of the pile (in feet).
2. The curve represents axial capacity of a straight-sided drilled pier. See text discussion for group effects.



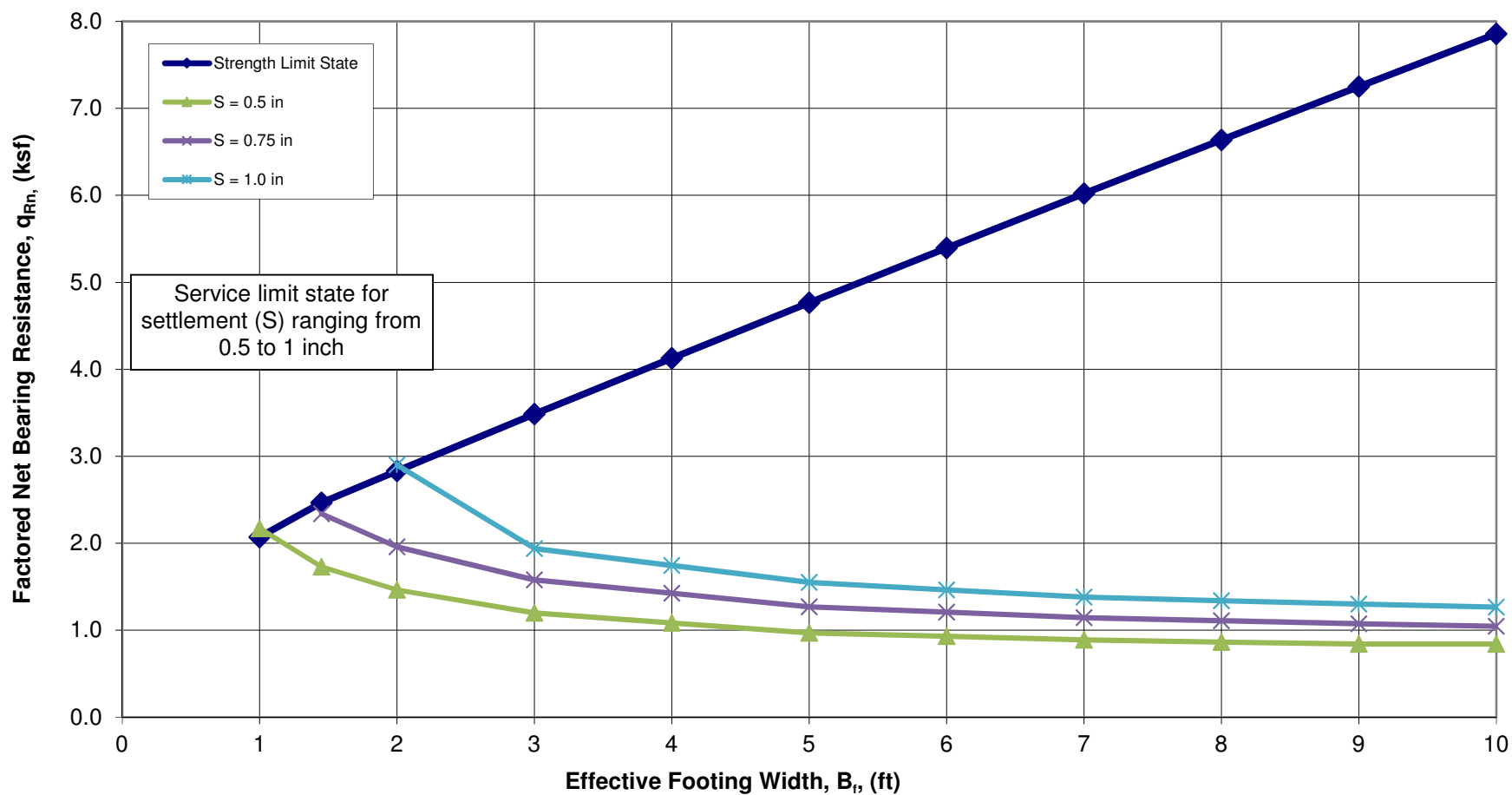
PROJECT NO.: 20162084  
 DRAWN BY: JA  
 CHECKED BY: KD  
 DATE: 2/3/2016  
 REVISED: 0

ULTIMATE AXIAL CAPACITY  
 UNIT DIAMETER (1-FOOT)  
 DRILLED PIER  
 STATIC CONDITIONS

GRAND CANALSCAPE  
 PHEONIX, ARIZONA

FIGURE

C1



**FACTORED BEARING RESISTANCE CHART**  
**PEDESTRIAN BRIDGE ABUTMENT SPREAD FOOTINGS**  
 Phoenix Grand Canalscape  
 Maricopa County, AZ

Report Date:  
Feb 2016

Project Number:  
20162084

Figure

C2

**BID PROPOSAL**  
**CITY OF PHOENIX, ARIZONA**  
**OFFICE OF THE CITY ENGINEER**  
**PROJECT TITLE: GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH**  
**PROJECT NO.: ST87600074 and AR63000013**  
**BOND ISSUE OR BUDGET PROJECT**

PROPOSAL to the City Engineer of the City of Phoenix.

In compliance with the Advertisement for Bids, by the City Engineer, the undersigned bidder:

---

(Print or Type Contractor Name and Vendor Number)

Having examined the contract documents, site of work and being familiar with the conditions to be met, hereby submits the following proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed and agrees to execute the contract documents and furnish the required bonds and certificates of insurance for the completion of said work, at the locations and for the prices set forth on the inside pages of this form.

Understands that construction of this project will be in accordance with all applicable Maricopa Association of Governments' (MAG) Uniform Standard Specifications and Uniform Standard Details, latest revision and the City of Phoenix Supplements, latest revision to the MAG Uniform Standard Specifications and Details, except as otherwise required by the project plans and specifications.

No proposal may be withdrawn for a period of 50 days after opening without consent of the Contracting Agency through the body or agent duly authorized to accept or reject the proposal except in the case of federally-assisted projects.

Understands that his proposal will be submitted with a proposal guarantee of cash, certified check, cashier's check or surety bond for an amount not less than ten (10) percent of the amount bid, as referenced in the Call for Bids.

Agrees that upon receipt of Notice of Award, from the City of Phoenix, he will execute the contract documents within 10 calendar days.

**Work will be completed within 360 calendar days**, beginning with the day following the starting date specified in the Notice to Proceed. The time allowed for completion of the work includes lead time for obtaining the necessary materials and/or equipment and approvals.

The bidder will acknowledge all addenda in writing. By writing the addendum number(s) below, the bidder agrees that this proposal is computed with consideration of the specification book(s) plus any addenda.

<u>ADDENDUM NO.</u>	<u>DATE</u>	<u>ADDENDUM NO.</u>	<u>DATE</u>
_____	_____	_____	_____
_____	_____	_____	_____

**City of Phoenix**

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

**BID PROPOSAL**

**Primary: ST87600074-2 (00)**

**Project No: ST87600074-2 AR63000013**

Item No.	Description	Unit	Quantity	Unit Price	Total
Project No.: ST87600074-2 Grnd Canal Arterial/Collector St Cross-2					
1 E6992000	"Allowance For Stormwater Pollution Prevention Best Management Practices (BMP'S)"	Job	1.00	\$5,000.00	\$5,000.00
2 M1000010	Art Work	Job	1.00		
3 M1042005	Allowance for Extra Work	Job	1.00	\$200,000.00	\$200,000.00
4 M1058000	Construction Surveying And Layout	Job	1.00		
5 M1058002	2-Person Survey Party Contingent Item	Hour	50.00		
6 M2010010	Clearing and Grubbing	Lump	1.00		
7 M3010001	Subgrade Preparation	Sq. Yd.	20,303.00		
8 M3100000	Aggregate Base Course	Ton	4,247.00		
9 M3360222	Sawcut, Remove and Replace A.C. Pavement, MAG Det#200, Type "A"	Sq. Yd.	13.00		



City of Phoenix

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

BID PROPOSAL

Primary: ST87600074-2 (00)

Project No: ST87600074-2 AR63000013

Item No.	Description	Unit	Quantity	Unit Price	Total
10 M3360240	Asphalt Concrete For Permanent Pavement Replacement, Type C 3/4, 4" Thick	Sq. Yd.	23.00		
11 M3360270	Asphalt Concrete for Permanent Pavement Replacement, Type C 3/4, 7" Thick	Sq. Yd.	94.00		
12 M3400015	Concrete Track Guideway Modification	Sq. Ft.	107.00		
13 M3400400	Concrete Sidewalk, Std. Detail P-1230	Sq. Ft.	7,161.00		
14 M3400406	Concrete Sidewalk, Std. Detail P-1230 Modified (6" Thick), Class A Concrete	Sq. Ft.	175,570.00		
15 M3400415	Truncated Domes for Sidewalk Ramps	Sq. Ft.	504.00		
16 M3400485	Concrete Curb Ramp, Std Details P-1233, P-1234, P-1235, P-1236, P-1237, P-1238, P-1239, P-1240 or P-1241 (6" Thick)	Sq. Ft.	692.00		
17 M3400553	Concrete Driveway Entrance, Std. Detail P-1244	Sq. Ft.	5,063.00		
18 M3400555	Concrete Driveway Entrance, Std. Detail P-1255-1	Sq. Ft.	275.00		
19 M3402222	Concrete Single Curb, Std. Detail 222, Type "B"	Lin. Ft.	32.00		

City of Phoenix

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

BID PROPOSAL

Primary: ST87600074-2 (00)

Project No: ST87600074-2 AR63000013

Item No.	Description	Unit	Quantity	Unit Price	Total
20 M3500010	Remove Portland Cement Concrete Single Curb; Curb and Gutter; Header Curb or Embankment Curb	Lin. Ft.	489.00		
21 M3500020	Remove Portland Cement Concrete Sidewalk, Driveway, Valley Gutter & Slab	Sq. Ft.	3,435.00		
22 M3500060	Remove Asphalt Concrete Pavement	Sq. Yd.	6,178.00		
23 M3500110	Remove Existing Fence	Lin. Ft.	54.00		
24 M3500113	Remove Existing Gate	Each	8.00		
25 M3500114	Remove Existing Bollard	Each	1.00		
26 M3500307	Remove and Reinstall Existing Traffic Signs	Job	1.00		
27 M3503010	Remove Existing Barricade and/or Guard Rail	Lin. Ft.	60.00		
28 M3513150	Furnish and Install Conduit, Sized Per Plans, Including Trenching and Backfill; Attachments to Above Ground Junction Boxes; and Slices	Job	1.00		
29 M3513151	Directional Boring for Conduit	Lin. Ft.	350.00		

**City of Phoenix**

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

**BID PROPOSAL**

**Primary: ST87600074-2 (00)**

**Project No: ST87600074-2 AR63000013**

Item No.	Description	Unit	Quantity	Unit Price	Total
30 M3513160	Furnish and Install Conductors and Bond Wires, Sized Per Plans, Complete and In Place Including Splices and Terminations for a Complete Set of Conductors	Job	1.00		
31 M3513170	Connection to Irrigation Controller	Each	8.00		
32 M3513235	No. 3-1/2 Junction Box	Each	27.00		
33 M4011062	Barricade, Standard Detail P-1106, Type "B"	Lin. Ft.	44.00		
34 M4012000	Traffic Control Devices	Job	1.00		
35 M4013000	Allowance for Uniformed, Off-duty Law Enforcement Officer	Job	1.00	\$2,500.00	\$2,500.00
36 M4303000	Plant Establishment Guarantee and Maintenance (including water and power if required)	Month	12.00		
37 M4304010	Decomposed Granite, 1/2" Minus For General Landscape	Cu. Yd.	1,027.00		
38 M4305001	1 Gallon Shrub	Each	188.00		
39 M4305005	5 Gallon Shrub	Each	1,467.00		

City of Phoenix

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

BID PROPOSAL

Primary: ST87600074-2 (00)  
Project No: ST87600074-2 AR63000013

Item No.	Description	Unit	Quantity	Unit Price	Total
40 M4305024	24" Box, Trees	Each	194.00		
41 M4400250	1/2", PVC Irrigation Pipe, Schedule 40	Lin. Ft.	20,245.00		
42 M4400255	3/4", PVC Irrigation Pipe, Schedule 40	Lin. Ft.	7,860.00		
43 M4400260	1" PVC Irrigation Pipe, Schedule 40	Lin. Ft.	10,270.00		
44 M4400301	1/2", PVC Irrigation Flex Pipe, Schedule 40	Lin. Ft.	5,547.00		
45 M4400510	1" Quick Coupler	Each	6.00		
46 M4400600	Flush Cap	Each	74.00		
47 M4403100	1" Reduced Pressure Backflow Prevention Unit and Cage	Each	6.00		
48 M4404000	Pull Box	Each	1.00		
49 M4404100	1" Electric Remote Control Valve And Assembly	Each	23.00		

**City of Phoenix**

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

**BID PROPOSAL**

**Primary: ST87600074-2 (00)**

**Project No: ST87600074-2 AR63000013**

Item No.	Description	Unit	Quantity	Unit Price	Total
50 M4404505	Pressure Regulator	Each	32.00		
51 M4404509	Single Port Emitter and Riser Assembly with Bug Cap	Each	1,655.00		
52 M4404510	Multi-Port Emitter and Riser Assembly with Bug Cap	Each	194.00		
53 M4405903	3" Schedule 80 PVC Irrigation Sleeve	Lin. Ft.	164.00		
54 M4406006	4 to 6 Station Sprinkler Controller with Surge Protection and Security Cabinet	Each	6.00		
55 M4406170	Valve Controller Wire, Trenching & Installation	Lin. Ft.	8,920.00		
56 M4406906	1" Master Valve and Flow Sensor Assembly	Each	6.00		
57 M4751001	Electrical Power Service Pedestal Cabinet (120/240 Volt) (Meyers MEUGL-W/TB)	Each	4.00		
58 M4851112	Furnish and Install LED Pole Mounted Area Light, 12' Mounting on Concrete Direct Buried Pole, Complete	Each	68.00		
59 M4851116	Furnish and Install LED Pole Mounted Area Light, 15' Mounting on Concrete Direct Buried Pole, Complete	Each	103.00		

**City of Phoenix**

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

**BID PROPOSAL**

**Primary: ST87600074-2 (00)**

**Project No: ST87600074-2 AR63000013**

Item No.	Description	Unit	Quantity	Unit Price	Total
60 M4851117	Furnish and Install Concrete Bollard with LED Light and Foundation, Complete	Each	41.00		
61 M4851118	Furnish and Install LED Accent Light, Complete	Each	12.00		
62 M5057069	Headwall per Special Detail	Each	4.00		
63 M5200150	Steel Bollards per Plans	Each	1.00		
64 M6101802	New Water Meter Box and Cover, Furnish & Install	Each	6.00		
65 M6101810	3/4" or 1" Water Meter Service Connect. Pipe and Fittings, Main to Meter, Furnish & Install	Lin. Ft.	94.00		
66 M6185024	24" Rubber Gasket Reinforced Concrete Pipe, Class V (Private Irrigation)	Lin. Ft.	141.00		

Subtotal for Project No: ST87600074-2  
Grnd Canal Arterial/Collector St Cross-2 (Items 1 thru 66)

\$ \_\_\_\_\_

## City of Phoenix

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

## BID PROPOSAL

Primary: ST87600074-2 (00)

Project No: ST87600074-2 AR63000013

Item No.	Description	Unit	Quantity	Unit Price	Total
Project No.: AR63000013 Grand Canalscape Art					
67 M3400003	Decorative Pavers, Fabrication and Installation	Sq. Ft.	1,700.00		
68 M3400432	Concrete Slab Per Detail	Sq. Ft.	2,400.00		
69 M4004113	Entrance Sign	Each	9.00		
70 M4354011	Waterproofing per Plans and Specifications	Sq. Ft.	50.00		
71 M4354200	Bench Without Back, Furnish and Install	Each	14.00		
72 M4354201	Bench Per Detail, Furnish and Install	Each	41.00		
73 M4354400	Single Shade Canopies, Furnish and Install	Each	2.00		
74 M5050023	Concrete Landscape Wall per Plan	Each	45.00		

Subtotal for Project No: AR63000013  
Grand Canalscape Art (Items 67 thru 74)

\$ \_\_\_\_\_



City of Phoenix

Program Id BE01RE23  
Run Date 3/16/2017  
Run Time 4:05 PM

BID PROPOSAL

Primary: ST87600074-2 (00)

Project No: ST87600074-2 AR63000013

Item No.	Description	Unit	Quantity	Unit Price	Total
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Total Amount of Construction Bid

Proj No: ST87600074-2 Grnd Canal Arterial/Collector St Cross-2 (Items 1 thru 66)

Proj No: AR63000013 Grand Canalscape Art (Items 67 thru 74)

\$ \_\_\_\_\_

\_\_\_\_\_  
Written Words & \_\_\_\_\_ /100 Dollars

PROPOSAL SUBMITTAL

PROJECT TITLE: GRAND CANALSCAPE

PROJECT NO.: ST87600074/AR63000013

THIS PROPOSAL IS SUBMITTED BY \_\_\_\_\_

a corporation organized under the laws of the State of \_\_\_\_\_

a partnership consisting of \_\_\_\_\_

\_\_\_\_\_

a joint venture consisting of \_\_\_\_\_

\_\_\_\_\_

or individual trading as \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

of the City of \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_

PHONE \_\_\_\_\_ VENDOR NO. \_\_\_\_\_

BY \_\_\_\_\_

Officer and Title (signature)

\_\_\_\_\_

Officer and Title (print or type)

\_\_\_\_\_

Date

\_\_\_\_\_  
WITNESS: If Contractor is an individual  
(signature)

\_\_\_\_\_  
ATTEST: If Contractor is Corporation or Partnership  
(signature and title)

## SURETY BOND

PROJECT TITLE: GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH  
PROJECT NO.: ST87600074 and AR63000013

That we, \_\_\_\_\_, as Principal, (hereinafter called the Principal) and the \_\_\_\_\_, a corporation duly organized under the laws of the State of \_\_\_\_\_, as Surety, (hereinafter called the Surety) are held and firmly bound unto the City of Phoenix as Obligee, in the sum of ten (10) percent of the total amount of the bid of Principal, submitted by him to the City of Phoenix for the work described below, for the payment of which sum, well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents and in conformance with A.R.S. #34-201.

**WHEREAS**, the said Principal is herewith submitting its proposal for **GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**NOW, THEREFORE**, if the City of Phoenix will accept the proposal of the Principal and the Principal will enter into a contract with the City of Phoenix in accordance with the terms of such proposal and give such Bonds and Certificates of Insurance as specified in the Standard Specifications with good and sufficient Surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter into such contract and give such Bonds and Certificates of Insurance, if the Principal will pay to the City of Phoenix the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by the proposal, then this obligation will be null and void, otherwise to remain in full force and effect.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 2017

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Title

\_\_\_\_\_  
Surety

\_\_\_\_\_  
WITNESS:

\_\_\_\_\_  
**A.M. BEST RATING:**



## City of Phoenix

### Small Business Enterprise Program

#### **SBE – DESIGN BID BUILD (DBB) CONTRACT CLAUSE**

**PROJECT #: ST87600074**

**CONTRACT #: TBD**

#### **PROJECT NAME: Description: Grand Canalscape Phase I Uptown & Gateway North**

The City of Phoenix Small Business Enterprise Program (SBE) is managed and administered by the Equal Opportunity Department, Contract Compliance Division. Phoenix is one of the fastest growing, multicultural cities in the country and has shown a historical commitment to business diversity. The City strives to advance the economic growth of businesses through its Small Business Enterprise (SBE) Program.

Through a coordinated effort among several city departments, the SBE Program provides SBE certification, procurement opportunities, construction subcontracting utilization, small business management and technical assistance and educational services and networking opportunities.

The Small Business Enterprise (SBE) participation goal for this project is as follows:

**SBE Required Goal = 16%**

**An annual SBE subcontracting participation goal has been established under this Contract. The Prime Contractor is required to demonstrate good faith efforts to utilize certified SBE firms to achieve this goal during the life of this contract.**

For purposes of determining the Contractor's actual SBE utilization during and at the end of the project, the Contractor shall meet or exceed their **Proposed SBE Goal Percentage (as indicated on the Submitter's received SBE Utilization Form with their bid submittal)** for the contract, for ALL work performed on the project, including any amount paid for contingencies and allowances, and selected alternates. **The Proposed Goal shall meet/or exceed the Required Goal.**

For purposes of calculating the Contractor's "Proposed SBE Goal Percentage" on the Contractor's Statement of Proposed SBE Utilization form, bidders must not propose SBE subcontractors from areas identified on the bid form as contingencies and allowances or proposed alternates. Any SBE participation proposed from these areas will be not counted towards meeting the SBE goal requirement necessary for contract award.

The "Total Bid" shall be defined as the total of all the unit prices, or the lump sum total, including alternates and contingencies and allowances. The "Base Bid" shall be defined as the "Total Bid" minus "all proposed alternates" as determined by the project manager. Any additional dollars paid under this contract, including any selected alternate(s), shall be subject to the **Proposed SBE Goal Percentage** listed on the Contractor's Statement of Proposed SBE Utilization form.



## City of Phoenix

### Small Business Enterprise Program

#### SBE PROGRAM DEFINITIONS

**Broker, Packager, Manufacturers' Representative, or Jobber** means a firm that is not a manufacturer or regular dealer as defined herein.

**Commercially Useful Function** (CUF) means that a SBE firm is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. A SBE must perform at least 75% of the total cost of its contract with its own work force in order to be determined to be performing a CUF on the contract.

**Contract** is a written agreement obligating the seller or business enterprise to furnish goods or services as submitted and the Purchaser or Buyer to pay for such goods or services.

**Contractor** is an individual, partnership, joint venture, corporation or firm that executes a contract with the City to perform services requested by a solicitation or procurement. The Contractor may be direct or through an authorized representative.

**Joint Venture (JV)** is an association between two or more persons, partnerships, corporations, or any combination thereof, formed to carry on a single business activity. The JV is limited in scope and duration to this contract. The resources, assets and labor of the participants must be combined in an effort to accrue profit.

**Manufacturer** means a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract.

**Purchaser** for purposes of this contract means the City.

**Regular Dealer or Supplier** means a business that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. The firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question.

**Small Business Enterprise (SBE)** means a small business that has been determined to meet the requirements for SBE certification with the City of Phoenix and whose certification is in force at the time of the award of business by the City. A directory of currently certified SBE firm is located at <https://phoenix.diversitycompliance.com>.

**Subcontract** a contract at any tier below the prime contract, including purchase orders.

**Subcontractor** is an individual, partnership, joint venture, corporation or firm that holds a contract at any tier below the prime contract, including purchase orders.

**Successful Submitter** is a Submitter who has been selected to perform services requested by a solicitation or procurement.



## City of Phoenix

### Small Business Enterprise Program

#### SECTION I. SBE CERTIFIED FIRMS

Only firms certified by the City of Phoenix under Chapter 18, Article VIII of the Phoenix city code are eligible to fulfill the participation goal stated above. A firm's ***certification must be in the trade areas listed on the proposed utilization form and current and in force at the date and time of the bid opening deadline.***

The most current electronic directory of all certified **SBE** firms can be accessed at:

<https://phoenix.diversitycompliance.com>

If you need to verify certification status, please contact the Equal Opportunity Department at (602) 262-6790 and identify yourself as a prime contractor bidding on this project. Prime contractors should verify that the certifications of the SBE firms are current prior to bid opening. ***If a firm's certification expires and is not renewed prior to the bid-opening deadline, that firm will be ineligible to satisfy the goal.***

#### SECTION II. SBE BID PROCEDURES

The bid envelope shall contain all information and documents related to the SBE requirements of this section. ***Failure to properly complete the "Contractor's Statement of Proposed SBE Utilization" and "Letter of Intent to Perform as a Subcontractor/Supplier" forms, or submit a fully documented waiver request as described below, will result in bid rejection.*** The required documentation includes:

1. **A Contractor's Statement of Proposed SBE Utilization** - The form shall document the name of each SBE firm that will be awarded a subcontract; services to be performed by each subcontractor; dollar amount to be paid for those services; and the total dollar amount that is being proposed in SBE participation.
2. **A Letter of Intent to Perform as a SBE Subcontractor/Supplier** (required for each SBE subcontractor/supplier proposed) The form shall be completed by the SBE firm that will be awarded the subcontract. The form documents services to be performed by the subcontractor/supplier and the total dollar amount of the subcontract that will be awarded to the SBE. Only the services performed in the area(s) described by the SBE's certification description can be counted towards the SBE goal requirement.

The bidder's proposed utilization of SBE firms to fulfill the participation goal must be submitted on the "Contractor's Statement of Proposed SBE Utilization" form included in the specification packet. Additionally, each of the **SBE** subcontractors/suppliers the bidder is proposing to use to meet the goal requirement on this contract must complete the "Letter of Intent to Perform as an SBE Subcontractor/Supplier" (LOI) form. Both forms must be completed and submitted as part of the bid packet by the bid-opening deadline.



## City of Phoenix

### Small Business Enterprise Program

**Failure to submit a completed “Contractor’s Statement of Proposed SBE Utilization” and signed “Letter of Intent to Perform as an SBE Subcontractor/Supplier” form for each of the proposed SBE firms will result in a bidder being declared non-responsive** to the requirements of these specifications and the bid will not be considered. The forms must contain the following:

1. The Certified SBE firm name and the certified trade or services to be performed.
2. The dollar amount of the proposed subcontract to be awarded to each SBE firm.
3. The total dollar amount of all SBE proposed subcontracts.

In instances where an exact dollar amount to be subcontracted with a SBE firm cannot be determined, the bidder shall indicate on Columns 3 and 4 of Part B Section 1 of the “Letter of Intent To Perform as a SBE Subcontractor/Supplier” form the minimum guaranteed hours/units and dollar amount that will be paid to the SBE firm. This situation applies only when a Contractor proposes to utilize a SBE firm that engages in work related to a broker, supplier or; a bid that is based on a per hour charge as in hauling/trucking or construction site security. Please note that this exception does not permit the Prime contractor to complete or modify any other part of the LOI document. Both, the SBE and the bidder must sign the LOI document prior to bid submittal. By signing the document, the bidder affirms that it has not altered or modified the document in any way other than, if applicable, entering the Unit/Hours and Total Quote Amount in Part B SECTION 1.

If a bidder proposes to utilize a firm not certified by the City of Phoenix and/or not certified in the proposed scope of work at the time of bid, the proposed utilization amount for that firm will be deducted from the total proposed SBE utilization amount used for determining if the bidder is responsive to the requirements of this section. Bidder shall not include any amount the SBE firm has indicated in the LOI document as work it will sublet or is not covered in their certification description in the Contractor’s Statement of Proposed SBE Utilization form. Only amounts associated with the work to be performed by the SBE, and indicated in the SBE’s certification description, may be counted towards the SBE participation goal requirement of this section.

If the reduced proposed SBE utilization is insufficient to meet the established participation goal required for this contract, and no waiver documentation has been submitted, the bidder shall be determined to be **non-responsive** to the requirements of this section and the bid will not be considered.

**A certified SBE firm bidding as a Prime Contractor cannot count the work it will self-perform towards meeting the required SBE subcontracting goal.**

A “Letter of Intent to Perform as a Subcontractor/Supplier” will be used in determining compliance with the requirements of this section. **The proposed subcontract dollar amount listed for each SBE firm on the “Contractor’s Statement of Proposed SBE Utilization” must match the SBE dollar amount indicated in the boxed areas in Parts C, D or E of the signed “Letter of Intent to Perform as a Subcontractor/Supplier.”** Failure to submit a completed LOI document with the SBE’s and bidder’s signatures shall be determined to be **non-responsive** to the requirements of this section and the bid will not be considered.





## City of Phoenix

### Small Business Enterprise Program

#### **SECTION III. IF THE BIDDER IS UNABLE TO MEET THE GOAL**

**A fully documented waiver request** detailing why the bidder has been unable to meet the SBE utilization goal in whole, or in part, and the “good faith” effort of the bidder to obtain SBE participation. In order to be viewed as good faith efforts, a bidder’s activities must be consistent with all activities that could reasonably be expected from a bidder who was actively and aggressively seeking to meet the SBE goal. To show proof of having exercised good faith efforts in trying to obtain bids from SBE firms to meet the utilization goals. The following factors are illustrative of those matters that shall be considered when judging whether the bidder made “good faith efforts”.

1. A cover letter addressed to the Street Transportation Procurement Section clearly indicating whether a full or partial waiver is being requested, the percentage to be waived, and the reasons the waiver is being sought.
2. If a partial waiver is being requested, a Bidder’s Statement of Proposed Utilization listing firms that will satisfy the portion of the goal that will be met must be included with the bid proposal. Additionally, a Letter of Intent to Perform as a Subcontractor/Supplier from each SBE firm that is proposed to be utilized must be included with the bid proposal.
3. Proof of contact with SBE firms, including but not limited to, fax logs, telephone logs, mail receipts, etc, including documentation of the number of times that firms were contacted, the dates of contact, and the name, phone number, fax number, and address of the contact person associated with each SBE firm. Solicitation of SBE subcontractors must be consistent with the solicitation of all subcontractors and must clearly demonstrate that SBE firms had sufficient time to submit an effective response.
4. Copies of the documents submitted to all subcontractors requesting their bid. This should include the scope of work to be bid and performed on the project.
5. Copies of bid responses/quotes from all subcontractors who bid to perform work on the project in the areas that SBE firms were also bidding on, including information as to why SBE bids were not considered.
6. Documentation that shows efforts made to provide assistance to SBE firms in the areas of bonding, insurance, or other contracting requirements.
7. Documentation of attendance at the pre-bid conference held for the project.
8. Documentation of contact made with City personnel seeking assistance in identifying eligible SBE firms for contracting opportunities on the project.



## **City of Phoenix**

### **Small Business Enterprise Program**

#### **SECTION IV. SBE WAIVER PROCEDURES**

Requests for a partial or full waiver of the SBE goal for the project including all Good Faith Documentation shall be submitted as part of the bid packet. The request will be reviewed to ensure compliance with the requirements of this section. If the request is determined to meet the requirements, a waiver hearing will be scheduled and the bidder notified of the date, time, and place of the hearing. All waiver hearings are open to the public. However, only the designated representative for the contractor and City staff may participate in the proceedings.

The contractor requesting the waiver may appear at the hearing to present their request and answer questions from the Waiver Review Committee regarding their submittal. The Committee will consider the information and documentation that was submitted at the time of bid. The bidder may not present additional or new information at the hearing. At the conclusion of the hearing process the Committee will make independent recommendations on the request for waiver. The presiding officer, on behalf of the Committee, will provide a written summary of the Committee's recommendations to the City Manager's designee, the City Engineer. The City Engineer will make the final decision to grant or deny the waiver request. The City Engineer's decisions shall be final. The City will notify the contractor regarding the final decision of the City Engineer.

If a partial or full waiver of the SBE goal is granted to a bidder, the bidder shall be considered to have met the project goals and their bid will be considered responsive to the requirements of this section. If a waiver is denied, the bidder is deemed non-compliant and non-responsive to the requirements of this section and their bid will not be considered.

**Failure to submit the Contractor's Statement of Proposed SBE Utilization form and a LOI from each SBE firm proposed OR a fully documented waiver request at the time of bid will be cause to determine the bidder non-responsive to the requirements of this section.**



## City of Phoenix

### Small Business Enterprise Program

#### SECTION V. LIMITATION OF THE USE OF SUPPLIERS AND BROKERS TO FULFILL THE SBE GOAL

Proposed expenditures to brokers and suppliers can be used to meet the utilization goal, provided that the combined applicable expenditures do not exceed 25 percent (25%) of the total SBE goal requirement. Contractors may count one hundred percent (100%) of the dollars proposed to be paid to a SBE supplier, and all costs associated with fees and commission to be paid to a SBE broker, up to the 25% limitation.

**Supplier (or Wholesaler)** is defined as firm that does not directly manufacture the product being supplied and has an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A supplier is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

**EXAMPLE:** *An SBE goal of 5% has been established on a project where the contractor has submitted a base bid of \$1,000,000. This results in a dollar goal of \$50,000 to be subcontracted to SBE's. The contractor proposes to contract with a SBE supplier for \$100,000. Only \$12,500, or 25 percent (25%), may be counted towards achievement of the SBE goal for this project. The remaining \$37,500 must be achieved through the use of firms that are not suppliers or brokers.*

**Broker** is defined as firm that arranges or expedites services or transactions through the use of individuals not directly employed by the company. Brokers are not regular suppliers. Only costs associated with the fees and commission paid to the certified firm for providing such services may be applied towards the SBE contract goal.

The following defines the expenditures to SBE firms that are NOT subject to the 25% limitation. The following expenditures may be counted in their entirety towards fulfilling 100% of the utilization goal:

1. Expenditures to certified SBE firms that operate and maintain an establishment or factory to produce, on the premises, the materials or supplies purchased for the contract.
2. Expenditures to a certified SBE fabricator that operates and maintains a factory to substantially alter materials or supplies before resale.
3. Expenditures, including fees and commissions, charged to provide bona fide technical and professional personnel recruitment for the contract. The total cost paid that shall be comparable to the industry standards customarily charged for the same or similar services.
4. Expenditures, including fees and commissions, charged for providing bonds and insurance specifically required for the performance of the contract. The total cost shall be comparable to the industry standards charged for the same or similar services.



## City of Phoenix

### Small Business Enterprise Program

All SBE firms proposed to participate on this contract opportunity must be SBE certified by the City of Phoenix prior to the date and time of the bid.

Participation on the contract will be calculated based on that portion (dollar value) of the contract that the SBE actually performs with its own forces. This includes the cost of supplies and materials obtained by the SBE for the work on the contract, **except** in cases when; it has been determined by the City *not* to be part of the firm's certification description; the SBE is certified as a "placer", "finisher", or "installer" of those materials only, or when the supplies and/or equipment it uses to perform its work is purchased or leased from the Contractor or its affiliate.

***Special emphasis and care should be taken to ensure that the following types of participation are handled properly when preparing your bid packet, as failure to correctly calculate the allowable SBE participation in the following areas shall result in your bid being declared non-responsive if the SBE goal requirement is not met:***

**Fees & Commissions:** SBE firms that supply a bona fide service for a fee or commission may be counted only to the extent of the fees or commissions charged by the SBE. This includes, but is not limited to, providing professional, technical, consultant, or managerial services, and bonds or insurance specifically required for the performance of a contract. Fees must be reasonable, not excessive, compared to fees customary for similar services.

***EXAMPLE:*** A SBE firm that supplies uniformed officers for security or traffic control may count only the amounts charged as a commission. The hourly amount paid to the officers may not be counted. If the "per hour" bid amount to the prime contractor is \$35, and \$25 per hour will be paid to the officers, only \$10 per hour can be counted towards achieving the SBE goal. If the firm or bidder estimates that there will be 200 hours of work bid at a rate of \$35 per hour, only \$2,000 of the total \$7,000 bid could be counted.

**Trucking & Hauling:** The amount of a trucking/hauling subcontract that may be counted towards the utilization requirements may be limited. An SBE must itself own and operate at least one fully licensed, insured, and operational truck that will be used on the contract. In addition, trucks the SBE leases without drivers under a long-term leasing agreement may be considered part of the trucking firm's workforce and counted in full, provided the leasing agreement(s) is/are for a period of not less than 6 months and; **the leased vehicles have been recorded with the City's Equal Opportunity Department's Certification Office prior to the submittal of the LOI document.**

***EXAMPLE:*** A SBE trucking firm uses seven trucks on a job; two are owned by the SBE and five are leased from other firms. If two of the five trucks are leased without drivers and the remaining three are leased with drivers from another firm, then the amount paid to the SBE for the services provided by the trucks it owns and the two it leases without drivers and operates with its own employees can be counted in full towards meeting the SBE requirements. The Contractor may not count any portion of the amount the SBE receives for the two trucks it leases with drivers towards the SBE utilization goal.



## **City of Phoenix**

### **Small Business Enterprise Program**

#### **SECTION VI. POST AWARD SBE COMPLIANCE INFORMATION - DBB**

Submittal of a bid to the City of Phoenix shall constitute an agreement by the bidder to comply with the SBE utilization requirements of this section should the bidder be awarded a contract. This includes, but is not limited to, the following compliance activities:

1. The contractor shall contract, or attempt to contract, in good faith with all SBE firms listed on the Bidder's Statement of Proposed SBE Utilization form submitted with their bid. The subcontract shall be for an amount that is equal to, or greater than, the total proposed dollar amount listed on the form, with the exception of instances where the City changes a scope of work in the contract that would reduce the available work in the subcontractor's area of performance.
2. The contractor shall not reduce any of the proposed SBE scopes of work or amounts indicated on the Bidder's Statement of Proposed SBE Utilization form without first submitting a Request for Exemption and receiving approval in writing from the City's Equal Opportunity Department (EOD), Contract Compliance Division.
3. The contractor shall notify the City of Phoenix Equal Opportunity Department immediately if any firm listed on the Bidder's Statement of Proposed SBE Utilization form refuses to enter into a subcontract or fails to perform according to the requirements of the subcontract.
4. Any reduction of retention by the City to the contractor shall result in a corresponding reduction to subcontractors or suppliers who have performed satisfactory work. The contractor has 14 days from the date their retention reduction takes affect to reduce retention to the subcontractors.
5. The contractor shall return all retention monies to subcontractors at such time as the work originally proposed by the subcontractor, and expressed in the original subcontract agreement, is complete and the purchaser (City) has accepted the work and paid the prime for the work performed by the subcontractor. Retention shall be paid no later than 30 days after such payment is made by the City.
6. The contractor shall act in good faith to meet the contract SBE utilization goal and provide all necessary documentation to show proof of those efforts as requested by the City.

If for any reason the SBE firm is decertified prior to the execution of a subcontract agreement, the bidder shall find additional SBE participation in the amount equivalent to or greater than that which was originally proposed for the SBE firm. Bidder shall make every good faith effort possible in finding a SBE replacement in the proposed trade area first, before considering SBE participation in other trade areas.



## City of Phoenix

### Small Business Enterprise Program

#### SECTION VII. Subcontract Assurances

Each contract signed by the Agency and the Successful Bidder and each subcontract signed by the Successful Bidder with a Subcontractor, including Subcontractors with lower tier Subcontractors must include the following assurances verbatim:

**Prompt Payment of Subcontractors** *The Contractor and Subcontractor shall promptly pay its lower tier subcontractors, sub consultants, or suppliers upon receipt of payment from the City of Phoenix (Agency).*

*Progress Payments: In accordance with the Arizona Revised Statutes (ARS), Section 34-221(G), the Contractor(s) shall promptly pay its subcontractors, sub consultants, or suppliers within seven (7) calendar days of receipt of each progress payment from the Agency. Any diversion by the Contractor(s) of payments received for work performed on the contract, or failure to reasonably account for the application or use of such payments, constitutes grounds for a declaration of breach of the contract with the Agency.*

*Retention Payments: If the Agency reduces the Contractor's retention, the Contractor shall correspondingly, within 14 days, reduce the retentions held against the Subcontractors and suppliers that have performed satisfactory work.*

*Release of Retention: The Contractor(s) shall ensure prompt and full payment of retentions to Subcontractors and suppliers when their work is complete, the Agency has accepted the work, and the Agency has paid the Contractor for the work. The Contractor shall pay each Subcontractor's and supplier's retention no later than 30 days after the Agency pays Contractor for the completed scope of work.*

**Changes to Subcontracts and Values** *The City of Phoenix prohibits Contractor(s) from altering the Contractor's Statement of Proposed SBE Utilization form without receiving prior, written consent from the City. The Equal Opportunity Department must be informed, in writing, and in advance of the following:*

- *Reduction to the scope of work performed by subcontractors working on the contract*
- *Changes in any of the subcontract values resulting in a reduced dollar amount*
- *Replacement and/or release of any subcontractor after contract award*

*Contractor(s) and Subcontractor(s) are required to complete a Request for Exemption Form and have the written approval of the Contract Compliance Office prior to taking action on any of the above listed matters related to SBE subcontractors.*

*In the event that any provision of this subcontract varies from the provisions of the contract or subcontract, the provisions for SBE contract compliance as contained in Administrative Regulation 1.89, Section IX, shall provide definitive guidance.*

**Disclaimer:** *Nothing in this section prevents the Contractor or Subcontractor from enforcing its subcontract with a lower tier Subcontractor or supplier for defective work, late performance, and other claims arising under the Subcontract.*



## City of Phoenix

### Small Business Enterprise Program

## SECTION VIII. RECORDS and REPORTING REQUIREMENTS

### 1. Records

During performance of the Contract, the Successful Submitter shall keep all records necessary to document DBE and Small Business participation. The Successful Submitter shall provide the records to the Agency within 72 hours of the Agency's request and at final completion of the Contract. The Agency will prescribe the form, manner, and content of reports. The required records may include but not limited to:

- a) A complete listing of all Subcontractors and suppliers on the project;
- b) Each Subcontractor's and supplier's scope performed;
- c) The dollar value of all subcontracting work, services, and procurement;
- d) Copies of all executed Subcontracts, purchase orders, and invoices; and
- e) Copies of all payment documentation.

### 2. Reports

- a. The contractor shall participate in all compliance reviews determined necessary by the City. This includes, but is not limited to participating in on-site reviews, providing monthly utilization reports of SBE activity, providing signed copies of subcontracts and/or purchase orders with each SBE listed on the Bidder's Statement of Proposed SBE Utilization form, and complying with any and all requests for information the City deems appropriate for effectively monitoring this contract for compliance with the SBE Program requirements.
- b. The contractor shall provide regular, monthly report/audit information that will assist us in effectively monitoring your compliance with the SBE Program requirements. This shall include listing all subcontractors working on the contract and reporting payments into the Certification and Compliance System <https://phoenix.diversitycompliance.com>. Reporting audits shall include all payments received from the City and payments you have issued to all subcontractors and suppliers. **Copies of the first 2 pages of the Pay Request submittal are required with each report. All Monthly audit reports are to be completed online by the 15<sup>th</sup> of every month. (<https://phoenix.diversitycompliance.com>).**
  - i. The total of all payments received from the City during the previous month.
  - ii. The first two pages of each payment application submitted for those payments.
  - iii. All payments made to Subcontractors during the previous month.

Before the Agency processes the Successful Submitter's final payment and/or outstanding retention held against the Successful Submitter, the Successful Submitter shall submit to the Agency a final certification of full and final payment to each Subcontractor in the form prescribed by the Agency. The form must be completed and certified by the Successful Submitter's and each Subcontractor's duly authorized agents.





## **City of Phoenix**

### **Small Business Enterprise Program**

#### **SECTION IX. PERFORMANCE OF A COMMERCIALY USEFUL FUNCTION**

The prime contractor may count only expenditures to SBE subcontractors that perform a commercially useful function in the work of the contract, as defined in Chapter 18 Article VI of the City Code. A "commercially useful function" constitutes performing real and actual services related to the contract.

SBE subcontractors may enter into second-tier subcontracts consistent with normal industry practices. If an SBE subcontracts greater than twenty-five **(25)** percent of the work of their contract, the SBE subcontractor shall be presumed not to be performing a commercially useful function. In this event, the prime contractor will not be allowed to claim any expenditure to the SBE subcontractor.

#### **SECTION X. FAILURE TO COMPLY WITH THE SBE PROGRAM REQUIREMENTS**

If the Equal Opportunity Department determines that the contractor will fail, or has failed, to meet the SBE subcontracting goals, and/or has failed to act in good faith to ensure compliance with the SBE conditions of its contract; it shall deem the contractor "noncompliant" and not in good standing. A noncompliant status shall result in the rejection of all future contract bids or offers for all projects or other procurements with the City until such time that the contractor has cured its breaches and demonstrates that it has faithfully performed its approved SBE utilization plan and all other provisions of this article required to be deemed in good standing. In addition to this action, the City may also exercise its option to impose any or all of the following remedies:

1. Withholding from the contractor ten percent (10%) of all future payments on the involved eligible project until it is determined that the contractor is in compliance;
2. Withholding from the contractor all future payments on the involved project until it is determined that the contractor is in compliance

Failure to cure a non-compliance status within the time frame provided by the City may result in further action, including but not limited to imposing any or all of the following sanctions:

1. Rejection of all future bids or offers from the contractor for any eligible project with the City or any of its departments or divisions for a period of (1) year after substantial completion of the contract.
2. Cancellation of the contract.



# City of Phoenix

Small Business Enterprise Program

## CONTRACTOR'S STATEMENT OF PROPOSED SBE UTILIZATION (DBB)

PROJECT NUMBER/NAME: ST87600074-Grand Canalscape Phase I Uptown & Gateway North

Required SBE Goal: 16%

SBE FIRMS	COMPANY NAME	SERVICES TO BE PROVIDED	SUPPLIER-YES/NO May not satisfy more than 25% of the Goal	SBE \$\$\$ AMOUNT from LOI Tables - Sections C, D, or E

(\$ \_\_\_\_\_ ) - (\$ \_\_\_\_\_ ) = (\$ \_\_\_\_\_ )

**Total Bid - Alternates = Base Bid**

(\$ \_\_\_\_\_ ) ÷ (\$ \_\_\_\_\_ ) X 100 = \_\_\_\_\_ %

**Total Proposed SBE Dollars ÷ Base Bid X 100 = Total Proposed SBE Participation %**

Proposed SBE Percentage must equal to or exceed the Required SBE Required Goal Percentage.

All additional contract dollars, including selected alternates, will be subject to the Proposed SBE Goal %. NO rounding allowed.

Do not alter or adjust any dollar amount or percentage on this form; it may have a negative impact on your bid.

**Total Proposed  
SBE Dollars**  
  
\$

I hereby certify by signing below the foregoing SBE firms shall be contracted to work on the trades identified above and/or supply material/equipment for this project.

The information shown above is a **true reflection of the proposed subcontracts.**

COMPANY NAME: \_\_\_\_\_ EMAIL: \_\_\_\_\_ PHONE: \_\_\_\_\_

NAME & TITLE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_



**City of Phoenix**

**Small Business Enterprise Program**

**Letter of Intent (LOI) To Perform as an SBE Subcontractor**

(THIS FORM **MUST** BE COMPLETED BY THE SBE SUBCONTRACTOR – BOTH SBE SUBCONTRACTOR & PRIME SIGNATURE ARE REQUIRED)

**Project Number: ST87600074**  
**Contract #: TBD**

**Project Description: Grand Canalscape Phase I Uptown & Gateway North**

TO: \_\_\_\_\_ (Insert Name of Prime Contractor)

FROM: \_\_\_\_\_ (Insert Name of SBE Firm)

**A.** The undersigned declares that the firm bidding to perform the work described herein, has been granted certification by the City of Phoenix (COP) as a Small Business Enterprise (SBE) in the area(s) of:

(COP) Certification Description:

**B.** The undersigned is bidding to perform the following scope(s) of work on the above referenced project:

**SECTION 1 - COMPLETE THIS PORTION IF THE SCOPE OF WORK IS BEING BID BY UNIT PRICE OR HOURLY RATE  
SUPPLIER, BROKER, TRUCKING, HAULING, UNIFORMED OFFICERS MUST USE THIS SECTION**

Scope of Work	Unit/Hourly Rate	# of Units/Hours	Total Quote Amount
			\$

**SECTION 2 - GENERAL OR SPECIALTY CONSTRUCTION TRADE AREAS MUST USE THIS SECTION**

Scope of Work	Total Quote Amount
	\$

**C.** Of the Total Quote Amount reflected in Part B-SECTION 2, the following scope(s) of work with the given amount **will not** be performed by the SBE or **is/are not** covered under the SBE's certification description:

**Scope(s) of Work** \_\_\_\_\_ **Amount \$** \_\_\_\_\_

Subtract Amount in Part C above from the Total Quote Amount in Part B-Section 2 = \* \$ \_\_\_\_\_  
**\* Only this amount shall be reflected on the Bidder's Statement of Proposed Utilization.**

**D.** If trucking services are included in Part B - SECTION 1 above, SBE **MUST** complete the following:

Of the Total Quote Amount noted in part B-Section 1, the SBE affirms that the amount of \* \$ \_\_\_\_\_ shall be performed by drivers the firm employs, and trucks the SBE owns and leases without drivers.  
(The amount referenced above is transferred from Step 9 of the Worksheet (L.O.I.W.-1). \*Only this amount shall be on the Statement of Proposed Utilization)

**E.** All subcontractors providing Broker or Traffic Control/Security Services indicated in Part B-SECTION 1 above **MUST Complete the Following:**

Rate of the SBE's fees/commissions \_\_\_\_\_%; for a Total Amount in fees/commissions of: \$ \_\_\_\_\_  
The Percentage and Total Amount referenced above is transferred from Steps 2 and 3 of the Worksheet (page L.O.I. W.-1).  
Only the Total Amt in fee/commissions shall be reflected on the Bidders Statement of Proposed Utilization.

Should the prime contractor receiving this form be selected for award of the contract, the undersigned affirms that he/she will enter into an agreement to perform the work bid herein.

\_\_\_\_\_  
(SBE Subcontractor Authorized Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Print Name and Title)

\_\_\_\_\_  
(Phone Number)

**By signing this LOI document, the Prime Contractor affirms that it has not altered or modified this document in any way other than, if applicable, entering the Unit/Hours and Total Quote Amount in Part B SECTION 1.**

\_\_\_\_\_  
(Prime Contractor Authorized Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Print Name and Title)

\_\_\_\_\_  
(Phone Number)



**City of Phoenix**  
Small Business Enterprise Program

**LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR/SUPPLIER  
INSTRUCTIONS AND WORKSHEET - L.O.I. W.-1**

**A Letter of Intent to Perform as a SBE Subcontractor/Supplier** (required for each SBE subcontractor/supplier proposed). The form documents services to be performed by the subcontractor/supplier and the total dollar amount of the subcontract that will be awarded to the SBE. Only the services performed in the area(s) described by the SBE's certification description can be counted towards the SBE goal requirement.

**Part I. Trucking and Hauling:** SBEs should indicate on Part B-Section 1 and Part D, of the LOI form, the information regarding trucks to be used in executing the contract. The City allows the counting of all payments for services provided by trucks which the SBE owns. Trucks which the SBE leases on a long-term basis and are operated with drivers the SBE employs may also be counted in full. The payments for short-term leased trucks, with or without SBE employed drivers cannot be counted.

**Only trucks for which leasing agreements have been submitted and approved by EOD as part of the SBE firm's current certification file shall be considered eligible for counting towards the goal.**

STEP ONE	STEP TWO	STEP THREE
Value of work expected to be performed by trucks owned by the SBE (2 Trucks)	Value of work expected to be performed by trucks leased ( <b>with drivers</b> ) by the SBE on a long-term basis (2 Trucks)	Combined value of work expected to be performed by other trucking firms and/or trucks leased ( <b>without drivers</b> ) by the SBE (3 Trucks)
<b>\$20,000</b>	<b>\$20,000</b>	<b>\$33,000</b>
STEP FOUR	STEP FIVE	STEP SIX
Estimated value for services provided by all trucks the SBE will use on the contract. <b>(Add Steps One, Two, and Three)</b>	Expected value of work performed by trucks not eligible for counting as SBE participation <b>(Value in Step Three)</b>	Total estimated value that can be counted for SBE participation <b>(Subtract Step Five from Step Four)</b> <b>\$73,000 - \$33,000</b>
<b>\$73,000</b>	<b>\$33,000</b>	<b>=\$40,000</b>

**Part II. Fees and Commissions:** Insert the information from below under Step Three-Commission/Fees Percentage and the Countable Amount for SBE Participation into Part E of the LOI form. This part is applicable for the use of uniformed officers to provide traffic control and security and other services provided at an hourly rate by non-employees of the SBE contractor.

**(The following information is provided as a sample only)**

STEP ONE			
Total Number of Hours	Per Hour Bid Amount	Calculation Formula: Total Gross Bid Amount	
<b>200</b>	<b>\$35</b>	<b><math>200 \times \\$35 = \\$7,000</math></b>	
STEP TWO			
Per Hour Bid Amount	Officers Hourly Rate	SBE Firm Commission/Fee	Calculation Formula: Fees/Commissions Percentage
<b>\$35</b>	<b>\$25</b>	<b>\$10</b>	<b><math>(10 / 35) \times 100 = 28.57\%</math></b>
STEP THREE			
Gross Bid Amount (from Step One)	Commission/Fee % (from Step Two)	Calculation Formula: Amount Countable for SBE Participation	
<b>\$7,000</b>	<b>28.57%</b>	<b><math>\\$7,000 \times .2857 = \\$2,000</math></b>	

**Part III. Construction Trade Areas:** SBE must indicate in the Scope of Work of Part B-Section 2 of the LOI form, **all** scope(s) of work associated with the Total Quote Amount. The SBE must complete Part C of the LOI form by entering the Scope of Work and amount not expected to be performed by the SBE or which is not covered under the SBE's certification description. Subtracting this amount from the Total Quote Amount in Part B-Sect. 2 will result in the portion of work that can be counted as SBE participation.

**CITY OF PHOENIX**  
**LIST OF MAJOR SUBCONTRACTORS AND SUPPLIERS**

PROJECT NO.: ST87600074 and AR63000013

PROJECT TITLE: GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH

DESCRIPTION OF WORK OR MATERIALS (CONTRACTOR TO ENTER TRADE/SUPPLIER AREAS)	SELF- PERFORMED BY PRIME CONTRACTOR	SUBCONTRACTOR/SUPPLIER COMPANY NAME (IF NOT SELF-PERFORMED)	CONTACT PERSON	PHONE NUMBER
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			

I hereby certify by signing below that the above listed companies will be utilized to perform work on this project for an amount **equal to or greater than 5% of the base bid**. These companies will not be removed or replaced without prior written approval by the City of Phoenix Project Manager. The City requires, as in Paragraph D – List of Major Subcontractors and Suppliers in the Information for Bidders that ALL vendors are listed or you will be disqualified. If you are self-performing the work, you must still list any suppliers for materials, or list any contractors that will assist you in any form.

COMPANY NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_

NAME & TITLE \_\_\_\_\_ PHONE NUMBER \_\_\_\_\_ DATE \_\_\_\_\_

EMAIL ADDRESS \_\_\_\_\_

**CITY OF PHOENIX**  
**LIST OF ALL SUBCONTRACTORS AND SUPPLIERS**

PROJECT NO.: ST87600074 and AR63000013Error! Reference source not found. PROJECT TITLE: GRAND CANALSCAPE PHASE I UPTOWN AND GATEWAY NORTH

DESCRIPTION OF WORK OR MATERIALS (CONTRACTOR TO ENTER TRADE/SUPPLIER AREAS)	SELF- PERFORMED BY PRIME CONTRACTOR	SUBCONTRACTOR/SUPPLIER COMPANY NAME (IF NOT SELF-PERFORMED)	CONTACT PERSON	PHONE NUMBER
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			
	<input type="checkbox"/> YES <input type="checkbox"/> NO			

I hereby certify by signing below that the above listed companies will be utilized to perform work on this project. These companies will not be removed or replaced on the project without prior written approval by the City of Phoenix Project Manager. The City requires, as in Paragraph D - List of All Subcontractors and Suppliers in the Information for Bidders that ALL vendors are listed or you will be disqualified. If you are self-performing the work, you must still list any suppliers for materials, or list any contractor's that will assist you in any form.

COMPANY NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_

NAME & TITLE \_\_\_\_\_ PHONE NUMBER \_\_\_\_\_ DATE \_\_\_\_\_

EMAIL ADDRESS \_\_\_\_\_

Authorized Contact for this Disclosure Statement

Name: \_\_\_\_\_

Title: \_\_\_\_\_

E-mail: \_\_\_\_\_

Phone number: \_\_\_\_\_

FAX number: \_\_\_\_\_

List any other DBA, trade name, other identity, or EIN used in the last five (5) years, the state or country where filed, and the status (active or inactive): (if applicable): \_\_\_\_\_

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**Business Characteristics**

Business entity type – Please check appropriate box and provide additional information:

- |  |                                    |
|--|------------------------------------|
| <input type="checkbox"/> Corporation                   | Date of incorporation: _____       |
| <input type="checkbox"/> Limited Liability Company     | Date organized: _____              |
| <input type="checkbox"/> Limited Liability Partnership | Date of registration: _____        |
| <input type="checkbox"/> Limited Partnership           | Date established: _____            |
| <input type="checkbox"/> General Partnership           | Date established: _____            |
| <input type="checkbox"/> Sole Proprietor               | How many years in business?: _____ |
| <input type="checkbox"/> Other (explain)               | Date Established: _____            |

Was the business entity formed in the State of Arizona? Yes \_\_\_\_\_ No \_\_\_\_\_  
If no, indicate jurisdiction where Business Entity was formed: \_\_\_\_\_

Is the Business Entity currently registered to do business in Arizona with the Arizona Corporation Commission? Yes \_\_\_\_\_ No \_\_\_\_\_ Not required \_\_\_\_\_ (if sole proprietor or general partnership)

Does the Business Entity have a City of Phoenix business privilege license? Yes \_\_\_\_\_ No \_\_\_\_\_ If “no” explain and provide detail such as “not required” or “application in progress” or other reason.

Is the Business Entity publicly traded? Yes \_\_\_\_\_ No \_\_\_\_\_

Is the responding Business Entity a Joint Venture? Note: If the Submitting Business entity is a Joint Venture, also submit a questionnaire for each Business Entity



comprising the Joint Venture. Yes \_\_\_\_\_ No \_\_\_\_\_

Is the Business Entity's Principal Place of Business/Executive office in Phoenix? If "no" does the Business Entity maintain an office in Phoenix? Yes \_\_\_\_\_  
No \_\_\_\_\_

Provide the address and phone number for the Phoenix office. \_\_\_\_\_

Is the business certified by Phoenix as a Small Business Enterprise? Yes \_\_\_\_\_ No \_\_\_\_\_

Identify Business Entity Officials and principal Owners:

Name(s) \_\_\_\_\_ Title \_\_\_\_\_ Percentage ownership \_\_\_\_\_%(Enter 0% if not applicable).

Name(s) \_\_\_\_\_ Title \_\_\_\_\_ Percentage ownership \_\_\_\_\_%(Enter 0% if not applicable).

Name(s) \_\_\_\_\_ Title \_\_\_\_\_ Percentage ownership \_\_\_\_\_%(Enter 0% if not applicable).

Name(s) \_\_\_\_\_ Title \_\_\_\_\_ Percentage ownership \_\_\_\_\_%(Enter 0% if not applicable).

#### **Affiliates and Joint Venture Relationships**

Does the Business entity have any Affiliates? Yes \_\_\_\_\_ No \_\_\_\_\_ Attach additional pages if necessary.

Affiliate name: \_\_\_\_\_

Affiliate EIN (if available): \_\_\_\_\_.

Affiliate's primary Business Activity: \_\_\_\_\_

Explain relationship with Affiliate and indicate percent ownership, if applicable. \_\_\_\_\_

Are there any Business Entity Officials or Principal Owners that the Business Entity has in common with this Affiliate? \_\_\_\_\_  
Individual's name: \_\_\_\_\_

Position/Title with Affiliate: \_\_\_\_\_

Has the Business Entity participated in any joint Ventures within the past three years? Yes \_\_\_\_\_ No \_\_\_\_\_  
(Attach additional pages if necessary)

Joint Venture Name: \_\_\_\_\_

Joint venture EIN (if applicable): \_\_\_\_\_

Identify parties to the Joint Venture: \_\_\_\_\_

### **Contract History**

Has the Business Entity held any contracts with the city of Phoenix in the last three (3) years? Yes \_\_\_\_\_ No \_\_\_\_\_ If "yes" attach a list.

### **Integrity – Contract Bidding**

Within the past three (3) years, has the Business Entity or any Affiliate been suspended or debarred from any government contracting process or been disqualified on any government procurement? Yes \_\_\_\_\_ No \_\_\_\_\_

Been subject to a denial or revocation of a government prequalification? Yes \_\_\_\_\_ No \_\_\_\_\_

Been denied a contract award or had a bid rejected based upon a finding of a non-responsibility by a government entity? Yes \_\_\_\_\_ No \_\_\_\_\_

Agreed to a voluntary exclusion from bidding/contracting with a government entity? Yes \_\_\_\_\_ No \_\_\_\_\_

Initiated a request to withdraw a bid submitted to a government entity or made any claim of an error on a bid submitted to a government entity? Yes \_\_\_\_\_ No \_\_\_\_\_

Initiated a request to withdraw a bid submitted to a government entity or made any claim of an error on a bid submitted to a government entity? Yes \_\_\_\_\_ No \_\_\_\_\_

For each "Yes" answer above, provide an explanation of the issues.

### **Integrity – Contract Award**

Within the past three (3) years has the Business Entity or any Affiliate been suspended, cancelled, or terminated for cause on any government contract? Yes \_\_\_\_\_ No \_\_\_\_\_

Been subject to an administrative proceeding or civil action seeking specific performance or restitution in connection with any government contract? Yes \_\_\_\_\_ No \_\_\_\_\_

For each "yes" answer, provide an explanation. (Attach explanation on a separate sheet of paper).

### **Certifications/Licenses**

Within the past three (3) years, has the Business Entity or Affiliate had a revocation, suspension, or disbarment of any business or professional permit and/or license? Yes \_\_\_\_\_ No \_\_\_\_\_

If "yes" provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, relevant dates, the government entity involved, and any remedial or corrective action(s) taken and the current status of the issues.

### **Legal Proceedings**

Within the past three (3) years, has the Business Entity of any Affiliate:

Been the subject of an investigation, whether open or closed, by any government entity for a civil or criminal violation? Yes \_\_\_\_\_ No \_\_\_\_\_  
Been the subject of an indictment, grant of immunity, judgment or conviction, (including entering into a plea bargain for conduct constituting a crime)? Yes \_\_\_\_\_ No \_\_\_\_\_

Received any OSHA citation and Notification of Penalty containing a violation classified as serious or willful? Yes \_\_\_\_\_ No \_\_\_\_\_

Had a government entity find a willful prevailing wage or supplemental payment violation? Yes \_\_\_\_\_ No \_\_\_\_\_

Been involved in litigation as either a plaintiff or a defendant involving a copyright or patent infringement violation or an anti-trust violation? Yes \_\_\_\_\_ No \_\_\_\_\_

Other than previously disclosed, for the past three (3) years:

(i) Been subject to the imposition of a fine or penalty in excess of \$1000 imposed by any government as a result of the issuance of citation, summons or notice of violation, or pursuant to any administrative, regulatory, or judicial determination? Yes \_\_\_\_\_ No \_\_\_\_\_

(ii) Been charged or convicted of a criminal offense pursuant to any administrative and/or regulatory action taken by any government entity? Yes \_\_\_\_\_ No \_\_\_\_\_

If "yes" provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, relevant dates, the government entity involved, and any remedial or corrective action(s) taken and the current status of the issues.

#### **Leadership Integrity**

If the Business Entity is a joint Venture Entity, answer "N/A – Not Applicable" to questions below:

Within the past three (3) years has any individual previously identified, or any other Business Entity Leader not previously identified, or any individual having the authority to sign, execute, or approve bids, proposals, contracts or supporting documentation with the city of Phoenix been subject to:

A sanction imposed relative to any business or professional permit and/or license? Yes \_\_\_\_\_ No \_\_\_\_\_

An investigation, whether open or closed, by any government entity for a civil or criminal violation for any business related conduct? Yes \_\_\_\_\_ No \_\_\_\_\_

DLB/dlb/828671V3



City of Phoenix  
AFFIDAVIT OF IDENTITY

**Your completion of this form is required by Arizona state law. A.R.S. §§ 1-501 and -50 only if you are a sole proprietor.**

I, \_\_\_\_\_ (print full name exactly as on document),  
hereby affirm, upon penalty of perjury, that I presented the document marked below to the City of  
Phoenix, that I am lawfully present in the United States, and that I am the person stated on the  
document. (select one category only)

☐ Arizona driver license issued after 1996.

Print first four numbers/letters from license:

--	--	--	--

☐ Arizona non-operating identification license.

Print first four numbers/letters:

--	--	--	--

☐ Birth certificate or delayed birth certificate issued in any state, territory or possession  
of the U.S.

Year of birth: \_\_\_\_\_; Place of birth: \_\_\_\_\_

☐ United States Certificate of Birth Abroad.

Year of birth: \_\_\_\_\_; Place of birth: \_\_\_\_\_

☐ United States Passport.

Print first four numbers/letters on Passport:

--	--	--	--

☐ Foreign Passport with United States Visa.

Print first four numbers/letters on Passport:

--	--	--	--

Print first four numbers/letters on Visa:

--	--	--	--

☐ I-94 Form with a photograph.

Print first four numbers on I-94:

--	--	--	--

☐ USCIS Employment Authorization Document (EAD).

Print first four numbers/letters on EAD:

--	--	--	--

or Perm. Resident Card (acceptable alternative):

--	--	--	--

☐ Refugee Travel Document.

Date of issuance: \_\_\_\_\_; Refugee country: \_\_\_\_\_

☐ U.S. Certificate of Naturalization.

Print first four digits of CIS Reg. No.:

--	--	--	--

☐ U.S. Certificate of Citizenship.

Date of issuance: \_\_\_\_\_; Place of issuance: \_\_\_\_\_

☐ Tribal Certificate of Indian Blood.

Date of issuance: \_\_\_\_\_; Name of tribe: \_\_\_\_\_

☐ Tribal or Bureau of Indian Affairs Affidavit of Birth.

Year of birth: \_\_\_\_\_; Place of birth: \_\_\_\_\_

Signed: \_\_\_\_\_ Dated: \_\_\_\_\_

## TEXT FOR TRAIL MARKER COVER PLATES:

Contractor shall be responsible for procuring nine 8" x 14" stainless steel light cover plates with etched informational signage. See construction plans, sheet 138 for additional information.

The below text blocks will be etched onto the stainless steel light cover plates. The font size will be 24pt and the font will be sans-serif. Each text block will be etched on three cover plates. Contractor to submit mock-up for approval by Engineer.

### **The Ancient History of the Grand Canal**

For nearly 1,500 years, the Sonoran Desert around Phoenix was home to a native culture that archaeologists have called the *Hohokam*. The Hohokam laid the groundwork for our region's modern canal system by building the most sophisticated prehistoric irrigation network in North America. It encompassed hundreds of miles of canals and watered tens of thousands of acres, making community life possible in the Phoenix Basin.

### **The Grand Canal Past and Present**

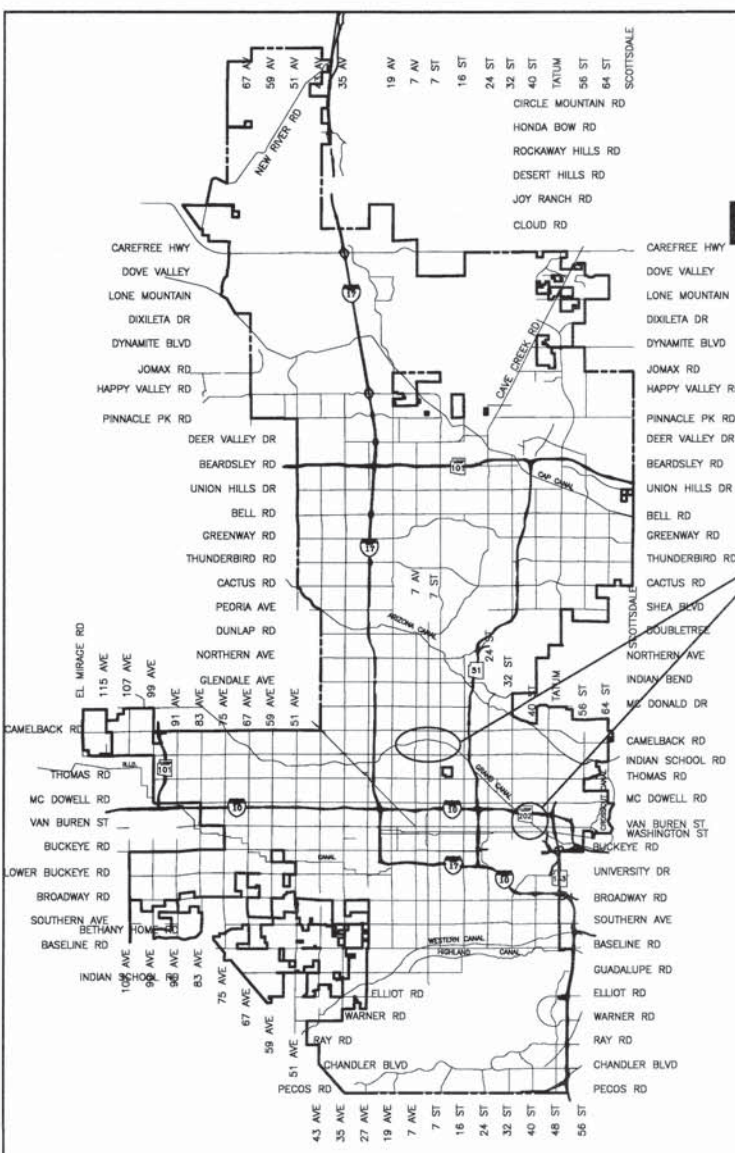
The Grand Canal extends nearly 22.5 miles from Tempe to Glendale. It is the oldest canal delivering water on the north side of the Salt River. It was planned in 1877 and constructed in 1878 by the Grand Canal Company. Portions of the Grand Canal follow the same path as one of the ancient Hohokam canals. It is one of eight canals in the current 131-mile canal system. The canals are owned by the United States government and operated by the Salt River Project (SRP).

### **The Waters of the Grand Canal**

The Grand Canal is part of a 131-mile network of modern canals run by the Salt River Project (SRP). Most of the canal water comes from the Salt and Verde Rivers which flow down from more than 8 million acres of mountain watersheds in northern and eastern Arizona. Some canal water also comes from groundwater carried by the Central Arizona Project Canal from the Colorado River.



T:\Temp\Projects\221863.00\600\_CADD\Deliv Files\Cover\CS.dwg 1/19/2017 11:20:04 AM James Barr TY Lin Full Scale.ctb



VICINITY MAP  
NTS

# CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN & CONSTRUCTION MANAGEMENT DIVISION GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH

ST87600074  
AR63000013

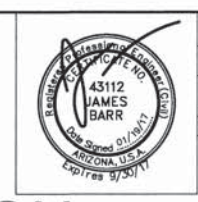


2017

LENGTH OF PROJECT = 18,860 LF = 3.57 MILES

City Benchmarks:

- 7th Ave/Campbell  
SRVWUA BC ON IRR BOX 17' N  
OF NW CORNER OF BRIDGE  
OVER GRAND CANAL AND 13' W  
OF BACK OF CURB W SIDE OF  
7TH AVE  
El. 1124.145
- 15th Ave/Campbell  
COP BC IN HH  
El. 1121.748
- 12th St/Campbell  
COP BC FLUSH  
El. 1127.304
- 7th St/Campbell  
SRP ALUMINUM CAP ON S END  
OF SW WINGWALL OF BRIDGE  
OVER GRAND CANAL  
El. 1127.319
- 34th St/Roosevelt  
COP BC FLUSH  
El. 1132.241
- 40th St/Van Buren  
US RECLAMATION SERVICE BC  
IN HH JUST E OF 2 COP BC  
FLUSH IN THE INTERSECTION  
El. 1141.768



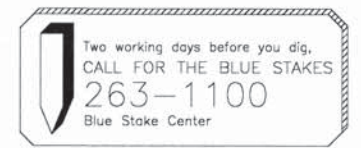
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	1	153	
TY LIN INTERNATIONAL engineers   planners   scientists			TY LIN INTERNATIONAL CONSULTING ENGINEER		
DES: CEM	DR: DF	CK: JAB	DATE: 01/17		

MAYOR  
GREG STANTON  
CITY MANAGER  
ED ZUERCHER  
CITY COUNCIL

DISTRICT NO 1.	THELDA WILLIAMS
DISTRICT NO 2.	JIM WARING
DISTRICT NO 3.	DEBRA STARK
DISTRICT NO 4.	LAURA PASTOR
DISTRICT NO 5.	DANIEL VALENZUELA
DISTRICT NO 6.	SAL DICICCIO
DISTRICT NO 7.	MICHAEL NOWAKOWSKI
DISTRICT NO 8.	KATE GALLEG0

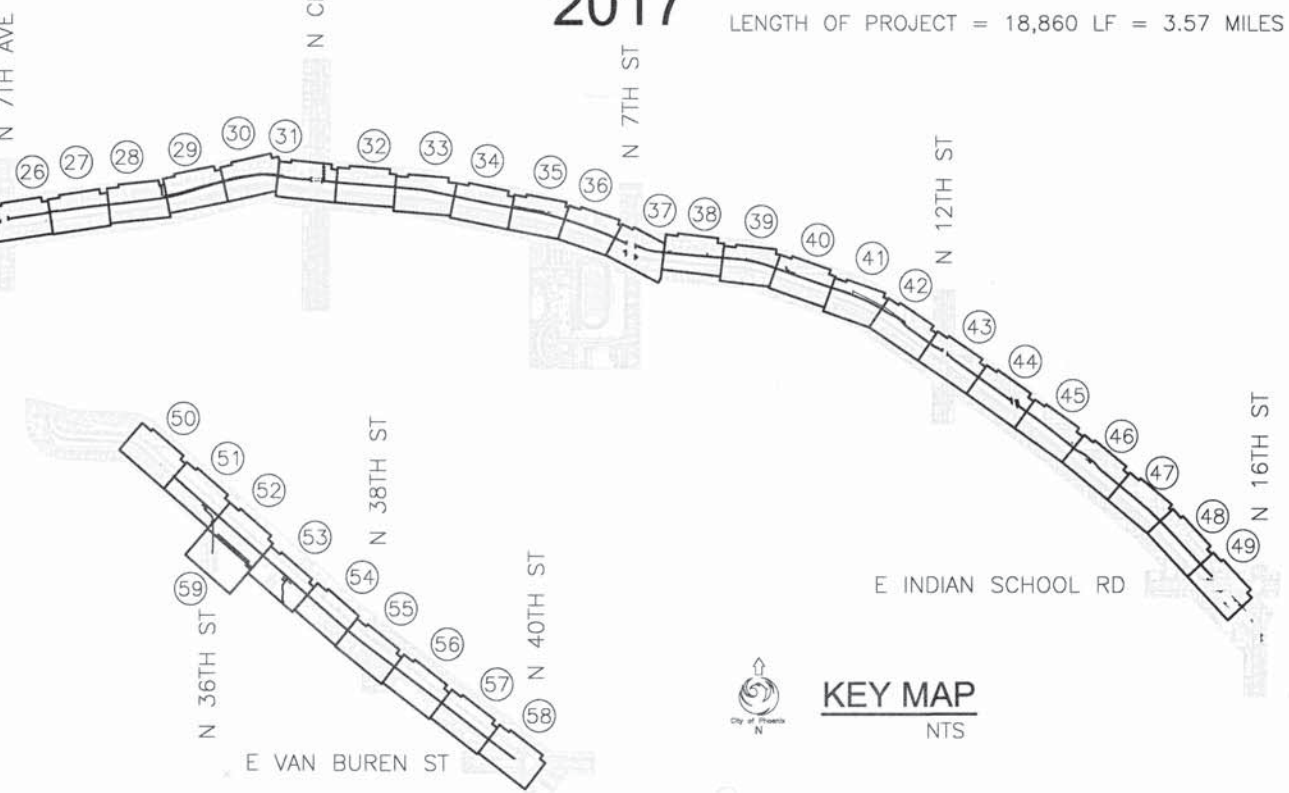
INDEX OF SHEETS

1	COVER SHEET
2	LEGEND AND NOTES SHEET
3-4	TYPICAL SECTION SHEETS
5-6	GEOMETRIC CONTROL SHEETS
7-8	QUANTITY SUMMARY
9-17	CURB RAMP DETAIL SHEETS AND GUIDEWAY DETAILS
18-19	SRP HEADWALL DETAIL AND SANDBLAST DETAIL
20-59	PATHWAY PLAN/PROFILE SHEETS
60-104	LANDSCAPE PLAN SHEETS
105-118	ELECTRICAL PLAN SHEETS
118-142	INTEGRATED ART SHEETS
143-153	STRUCTURAL SHEETS



\*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-26, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.\*

APPROVED 3/3/17  
ASSISTANT STREET TRANSPORTATION DIRECTOR  
DATE  
APPROVED 2-24-17  
DEPUTY STREET TRANSPORTATION DIRECTOR  
DATE



KEY MAP  
NTS

PROJECT NUMBER: ST87600074



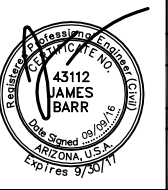
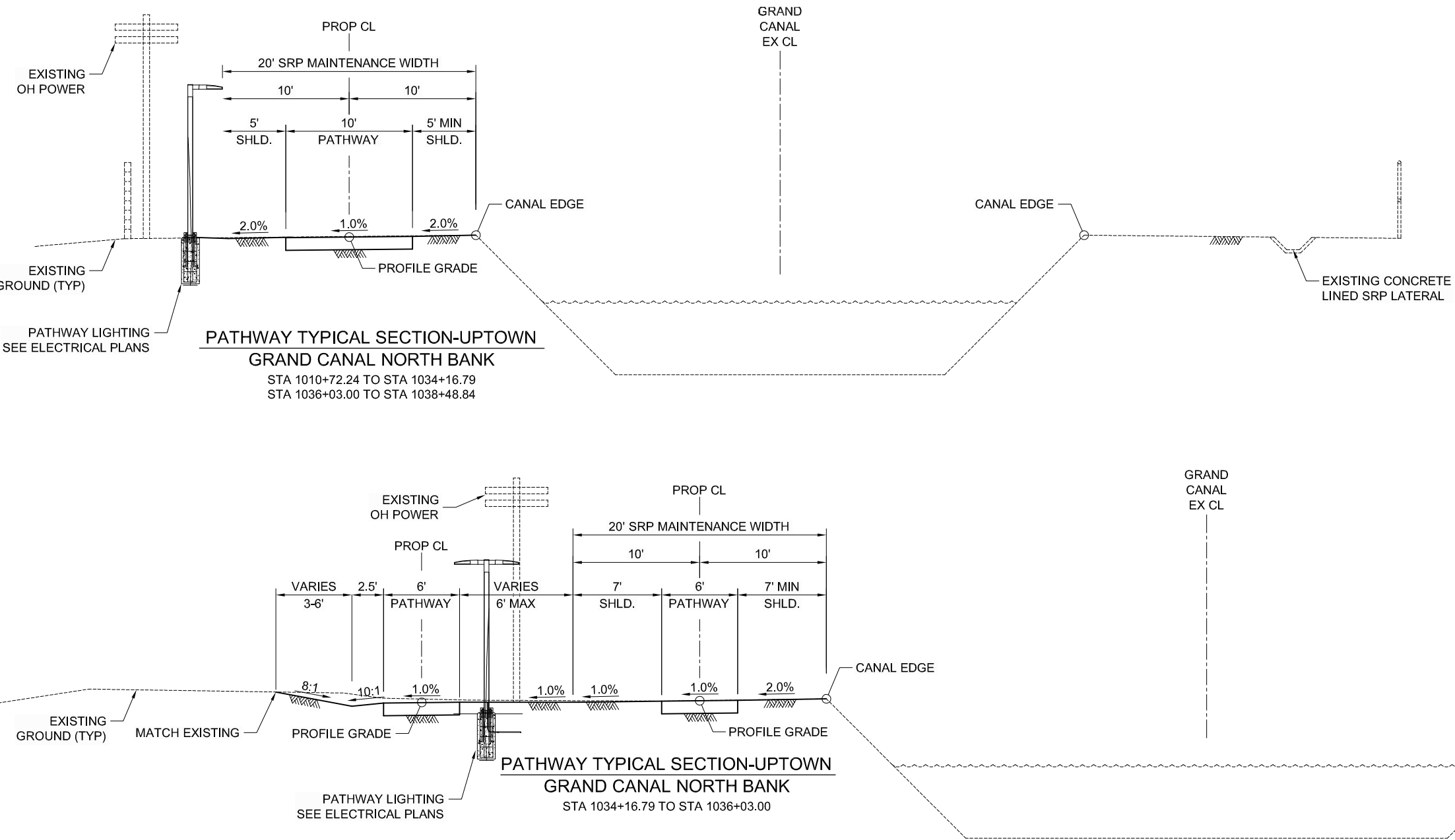


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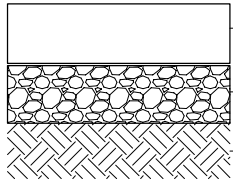
GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	3	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB		DATE: 09/16



6" PCCP, WELDED WIRE MATTING TO  
BE PLACED IN TOP HALF OF PCCP  
REFERENCE SECTION 1003 OF  
ADOT SPECIFICATIONS  
4" ABC

SUBGRADE PREPARATION PER SECTION  
301 OF THE MAG SPECIFICATIONS &  
CITY SUPPLEMENTAL SECTION 301.

PATHWAY STRUCTURAL SECTION  
NOT TO SCALE



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## TYPICAL SECTIONS

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET	TOTAL
DATE: 09/16	DATE: 09/16	DATE: 09/16	NO:	SHEETS
SCALE: N.T.S.			3	153

TY Lin Hall Scale.cfb

Daniel Fromm

9/1/2016 11:44:42 AM

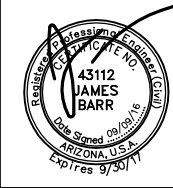
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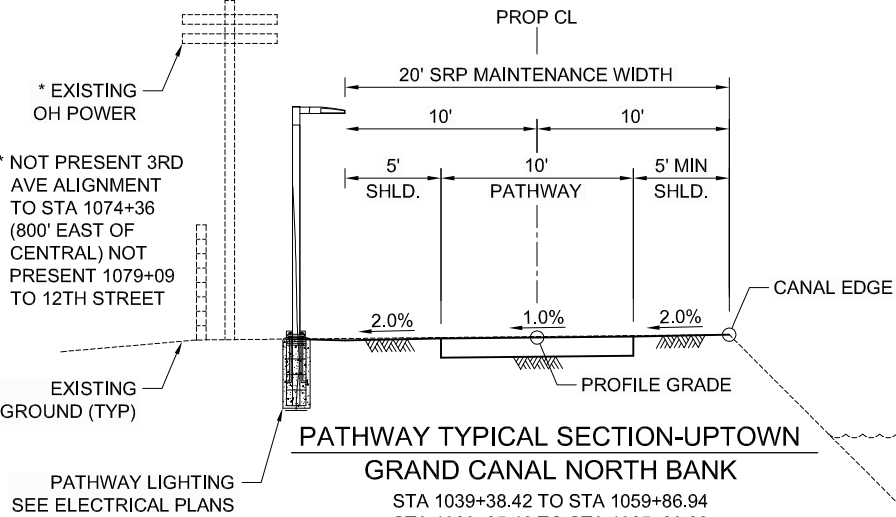
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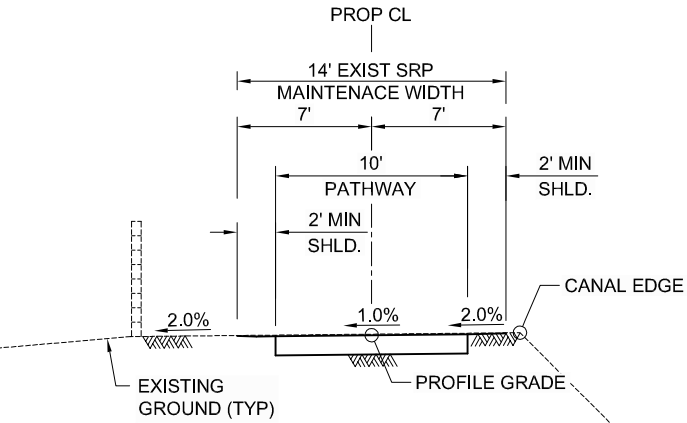
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	4	153	
TY. LIN INTERNATIONAL			T.Y.LIN INTERNATIONAL		
engineers   planners   scientists			CONSULTING ENGINEER		
DES: CEM	DR: DF	CK: JAB	DATE: 09/16		

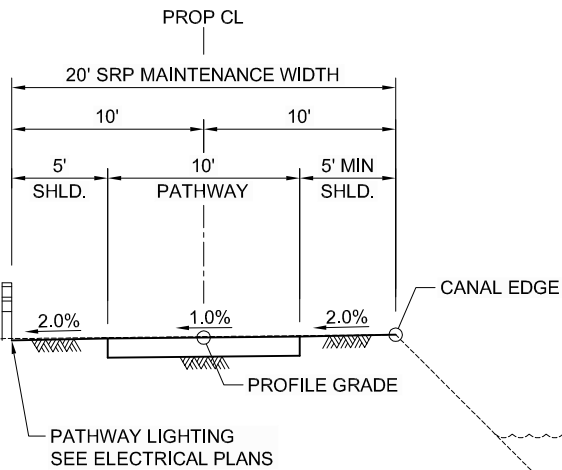
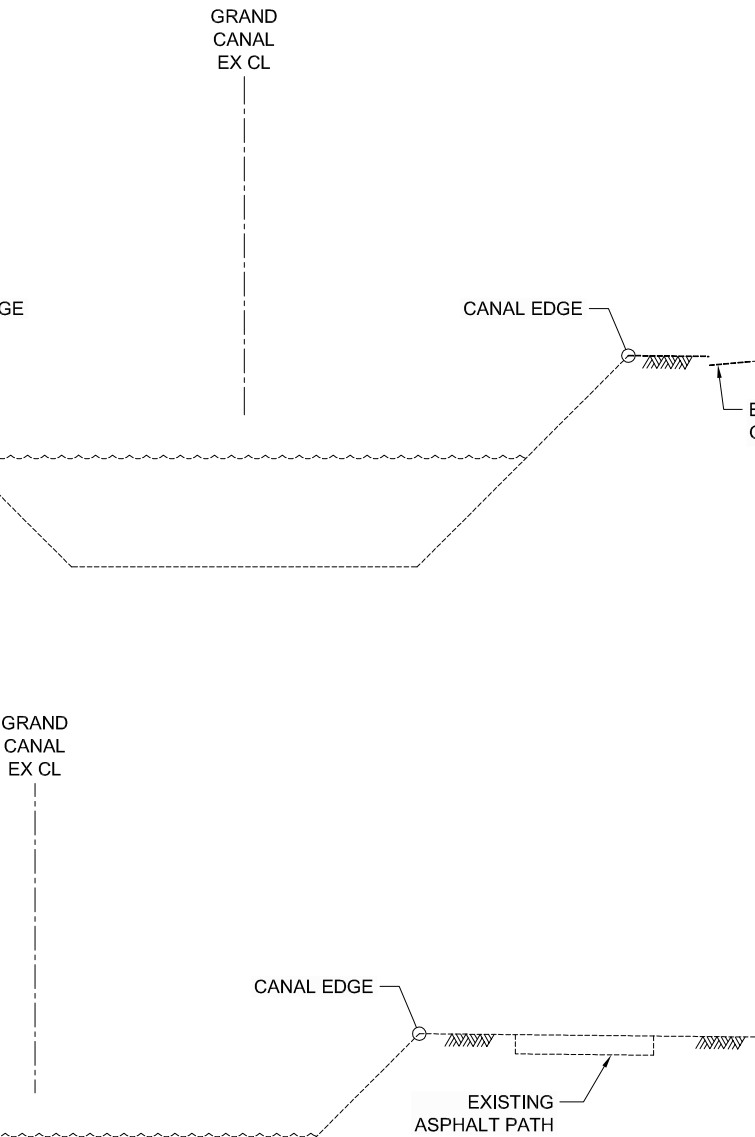


STA 1039+38.42 TO STA 1059+86.94  
STA 1060+85.48 TO STA 1065+20.22  
STA 1066+41.48 TO STA 1076+56.92  
STA 1077+46.86 TO STA 1079+23.81  
STA 1090+56.54 TO STA 1092+60.61  
STA 1093+56.96 TO STA 1108+13.96  
STA 1112+48.03 TO STA 1117+55.41  
STA 1122+06.57 TO STA 1151+30.86



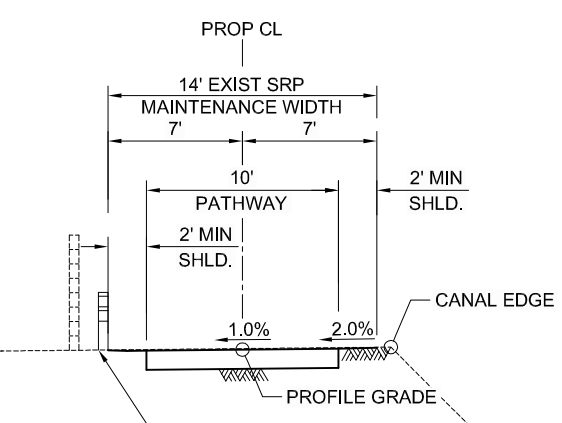
STA 1079+23.81 TO STA 1090+56.54  
STA 1110+38.25 TO STA 1112+48.03  
STA 1117+55.41 TO STA 1118+76.34  
STA 1120+57.40 TO STA 1121+47.32

PATHWAY TYPICAL SECTION-UPTOWN  
GRAND CANAL NORTH BANK



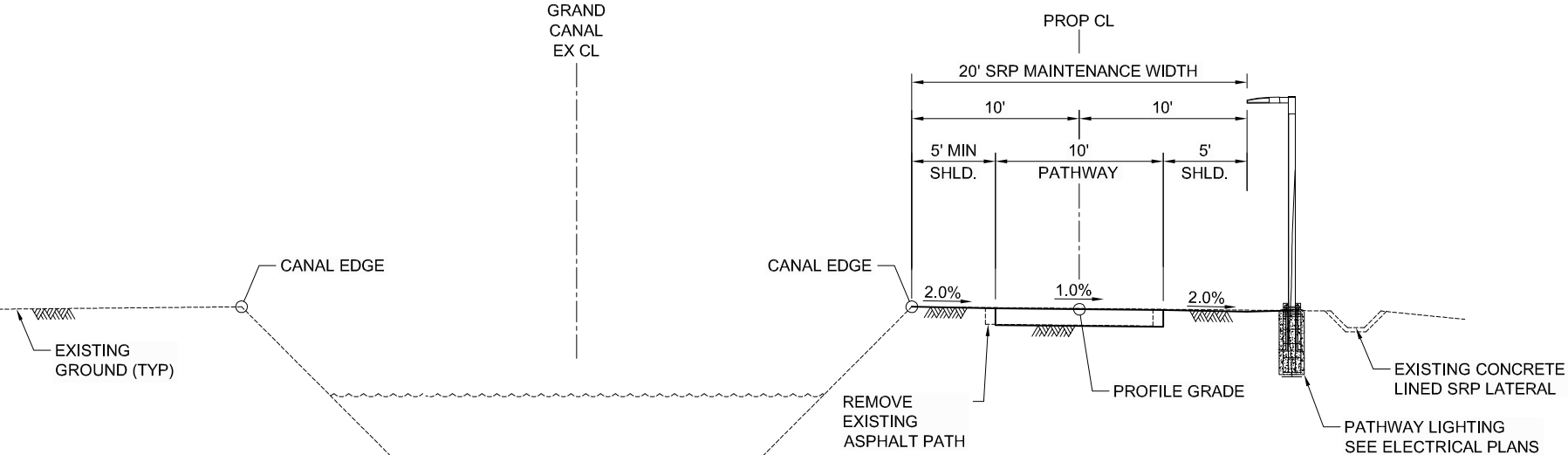
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STA 1076+56.92 TO STA 1077+46.86  
STA 1108+13.96 TO STA 1110+38.25

PATHWAY TYPICAL SECTION-UPTOWN  
GRAND CANAL NORTH BANK



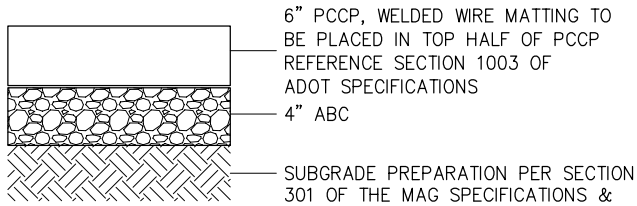
STA 1118+76.34 TO STA 1120+57.40

PATHWAY TYPICAL SECTION-UPTOWN  
GRAND CANAL NORTH BANK



STA 2021+63.22 TO STA 2058+76.20

PATHWAY TYPICAL SECTION-GATEWAY NORTH  
GRAND CANAL SOUTH BANK



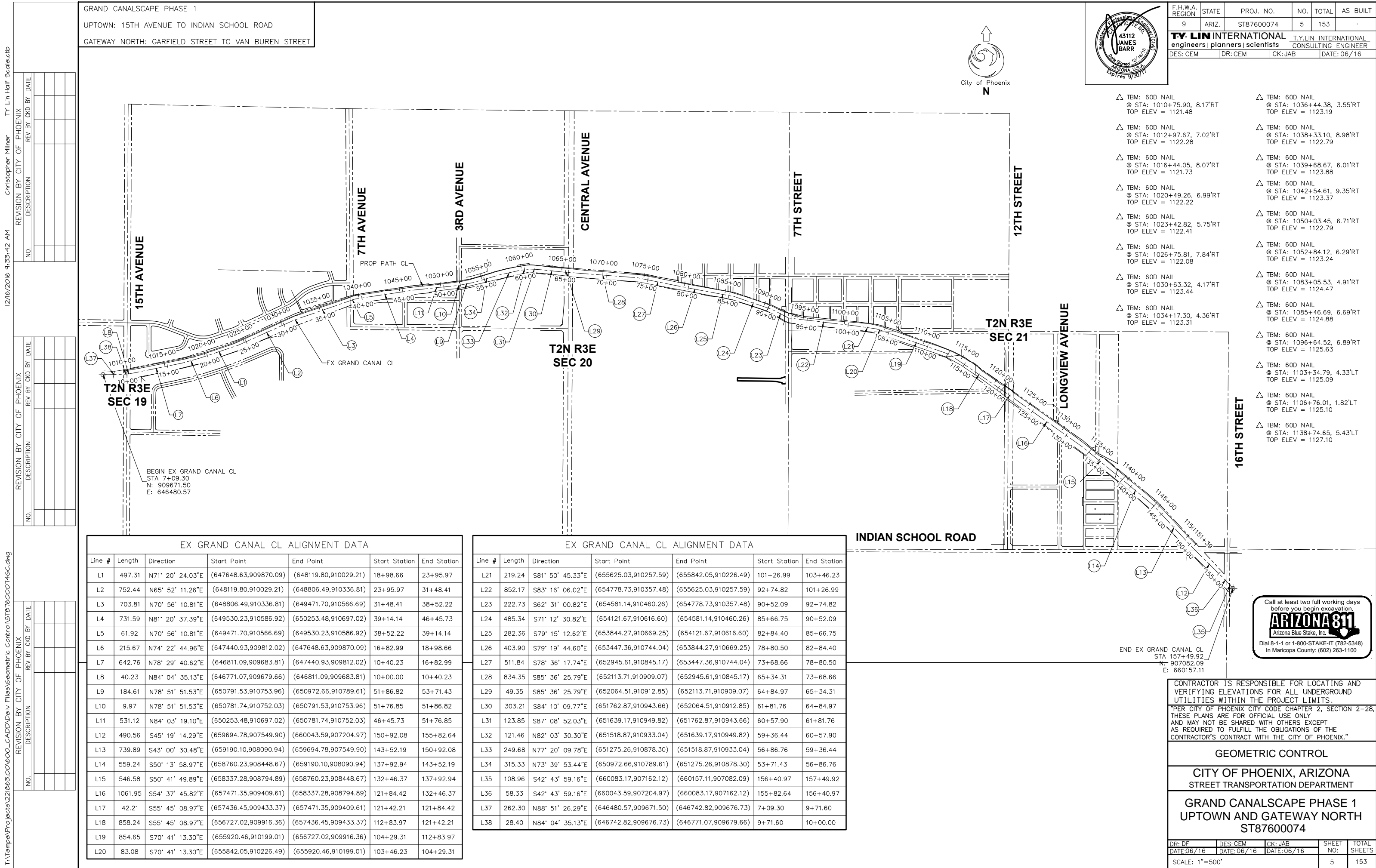
PATHWAY STRUCTURAL SECTION  
NOT TO SCALE



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\*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

TYPICAL SECTIONS				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: CEM DATE: 09/16	DES: CEM DATE: 09/16	CK: JAB DATE: 09/16	SHEET NO: 4	TOTAL SHEETS 153
SCALE: N.T.S.				

ST87600074, SEPTEMBER 2016



12/16/2016 4:33:42 AM

Christopher Miner

REVISION BY CITY OF PHOENIX

REVISION BY CITY OF PHOENIX

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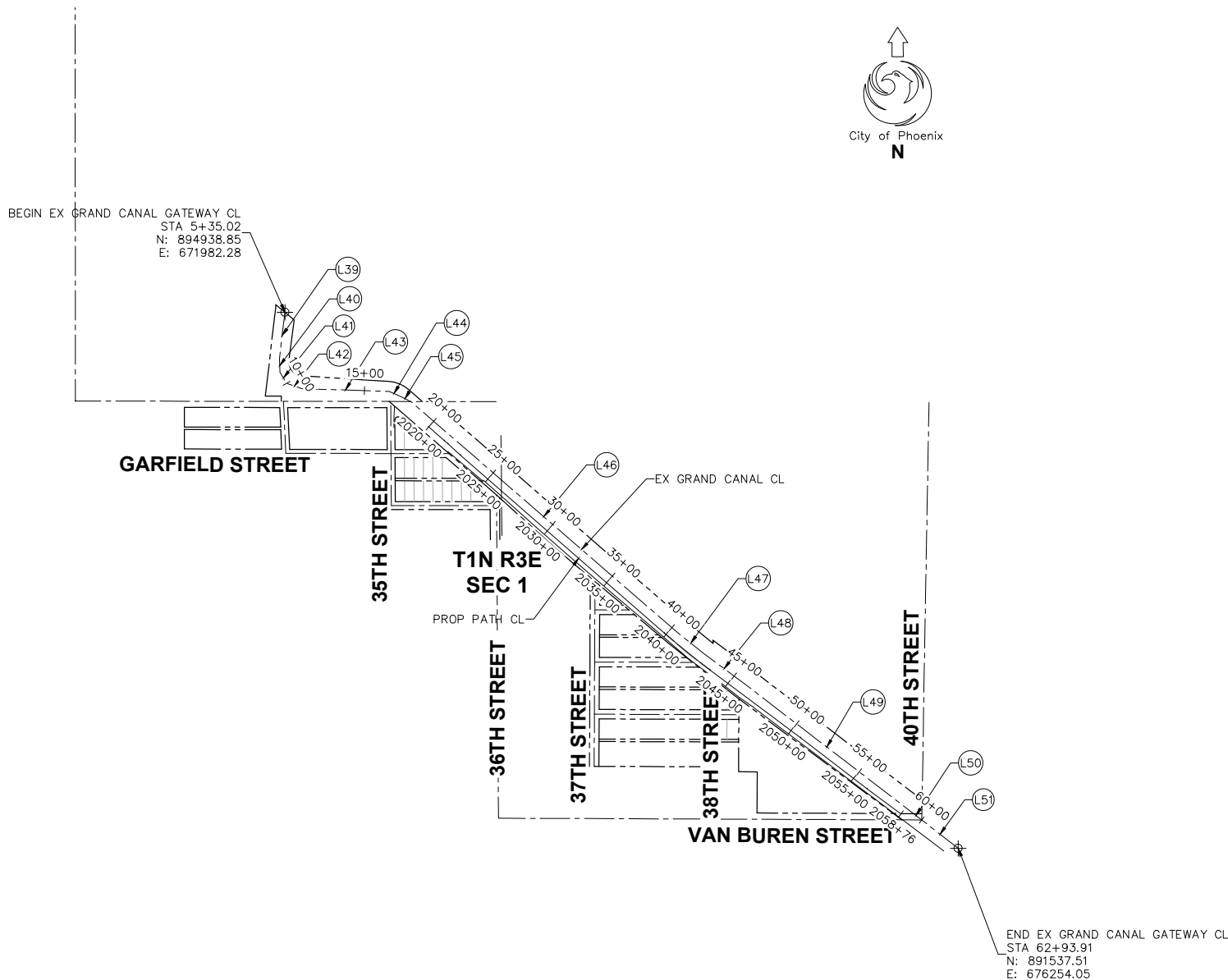
ST87600074, OCTOBER 2016

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CKD BY DATE

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CKD BY DATE

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CKD BY DATE

<p>GRAND CANALSCAPE PHASE 1</p> <p>UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD</p> <p>GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET</p>
--




EX GRAND CANAL CL ALIGNMENT DATA						
Line #	Length	Direction	Start Point	End Point	Start Station	End Station
L39	298.17	S6° 49' 42.01"W	(671982.28,894938.85)	(671946.83,894642.79)	5+35.02	8+33.20
L40	86.17	S2° 33' 23.13"E	(671946.83,894642.79)	(671950.68,894556.70)	8+33.20	9+19.37
L41	81.94	S31° 07' 53.61"E	(671950.68,894556.70)	(671993.04,894486.57)	9+19.37	10+01.30
L42	102.99	S71° 28' 51.07"E	(671993.04,894486.57)	(672090.69,894453.86)	10+01.30	11+04.29
L43	551.06	S88° 09' 16.98"E	(672090.69,894453.86)	(672641.47,894436.11)	11+04.29	16+55.35
L44	70.41	S67° 22' 31.80"E	(672641.47,894436.11)	(672706.46,894409.03)	16+55.35	17+25.76
L45	82.62	S63° 35' 19.66"E	(672706.46,894409.03)	(672780.45,894372.28)	17+25.76	18+08.38
L46	2233.59	S49° 05' 36.42"E	(672780.45,894372.28)	(674468.56,892909.66)	18+08.38	40+41.97
L47	225.36	S51° 18' 29.00"E	(674468.56,892909.66)	(674644.45,892768.78)	40+41.97	42+67.33
L48	306.73	S53° 30' 08.05"E	(674644.45,892768.78)	(674891.03,892586.34)	42+67.33	45+74.06
L49	1333.91	S52° 27' 29.40"E	(674891.03,892586.34)	(675948.70,891773.53)	45+74.06	59+07.98
L50	92.02	S52° 17' 51.07"E	(675948.70,891773.53)	(676021.51,891717.25)	59+07.98	60+00.00
L51	293.91	S52° 17' 51.07"E	(676021.51,891717.25)	(676254.05,891537.51)	60+00.00	62+93.91



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	6	153	.
<b>T.Y. LIN INTERNATIONAL engineers   planners   scientists</b>			<b>T.Y.LIN INTERNATIONAL CONSULTING ENGINEER</b>		
DES: CEM		DR: CEM	CK: JAB	DATE: 06 / 16	

AILE  
+90.40, 39.08'RT  
1135.78  
AILE  
+15.05, 38.58'RT  
1135.61  
AILE  
+88.89, 9.03'LT  
1138.69  
AILE  
+72.78, 12.45'RT  
1138.42  
AILE  
+56.94, 6.73'LT  
1139.12  
AILE  
+77.01, 6.58'LT  
1139.40  
AILE  
+30.72, 3.72'LT  
1140.41  
AILE  
+58.28, 8.20'LT  
1141.85



**Call at least two full working days before you begin excavation.**

## **ARIZONA 811**

Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.  
  
**\*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.\***

GEOMETRIC CONTROL					
CITY OF PHOENIX, ARIZONA					
STREET TRANSPORTATION DEPARTMENT					
GRAND CANALSCAPE PHASE 1					
UPTOWN AND GATEWAY NORTH					
ST87600074					

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06 / 16	DATE: 06 / 16	DATE: 06 / 16	6	153

SCALE: 1"=500'

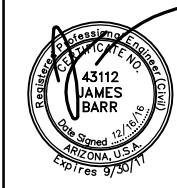
ST87600074, OCTOBER 2016

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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	7	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB	DATE: 09/16	

[illegible]

Sandblast street name locations shown for reference only. Item M100010 measured and paid for on a complete job basis.  
Remove and Relocate Existing Traffic Signs locations shown for reference only. Item M3500307 measured and paid for on a complete job basis.



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## SUMMARY OF QUANTITIES

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

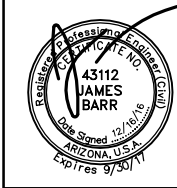
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DATE: 09/16	DATE: 09/16	DATE: 09/16		
SCALE: N.T.S.			7	153

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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	8	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB	DATE: 09/16	

[illegible]

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"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## SUMMARY OF QUANTITIES

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16		
SCALE: N.T.S.			8	153





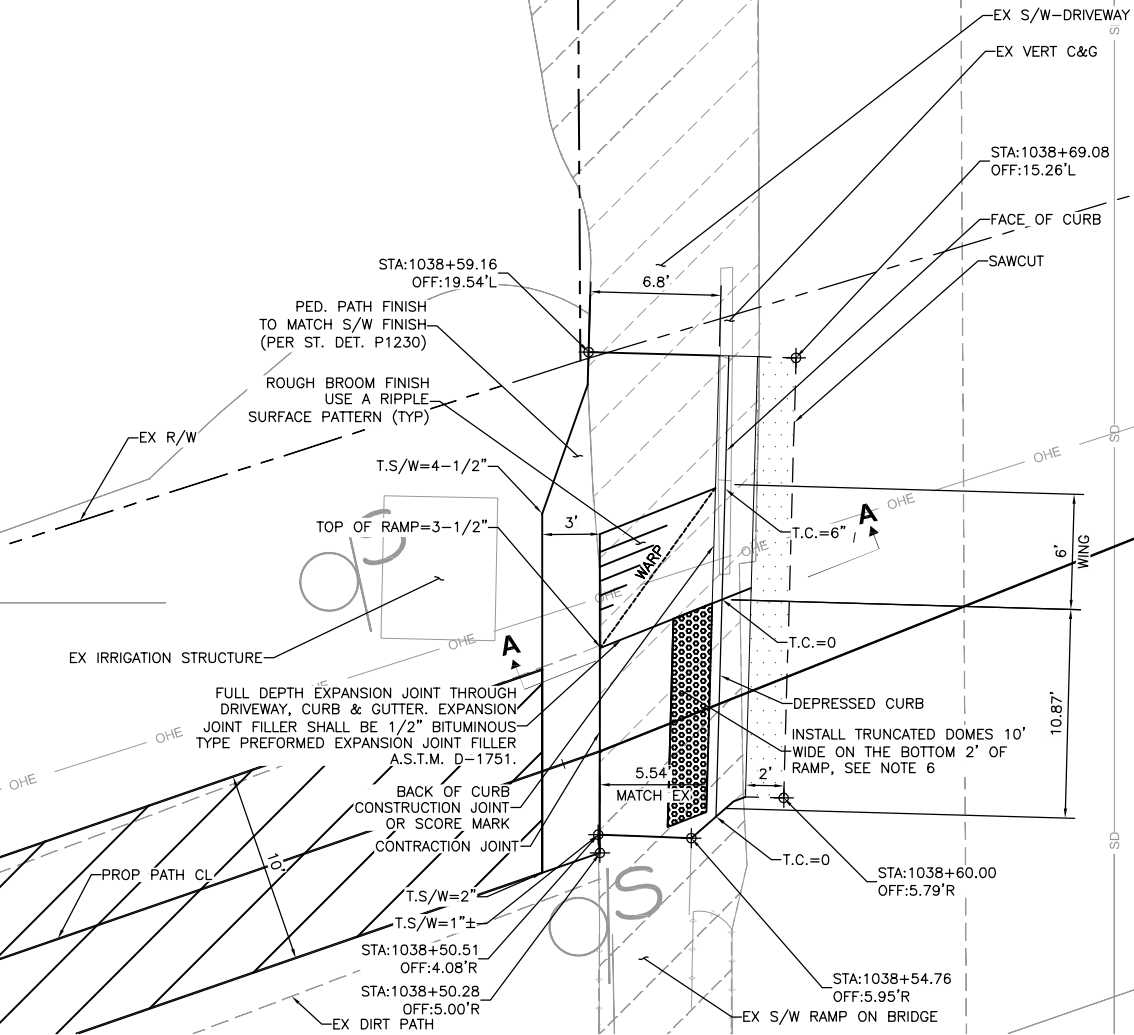
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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

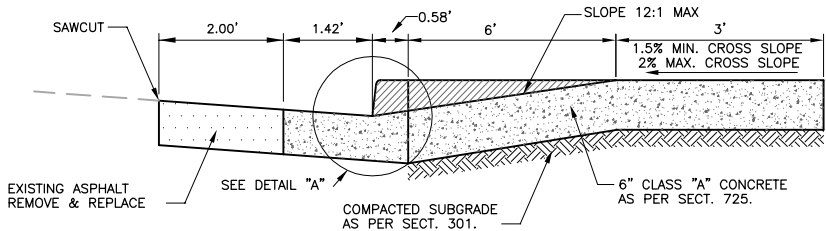


### 7TH AVENUE DRIVEWAY - PEDESTRIAN RAMP COMBINATION DETAIL

SEE SHEET 26 FOR PATHWAY PLAN AND PROFILE  
SCALE: 1"=5' H

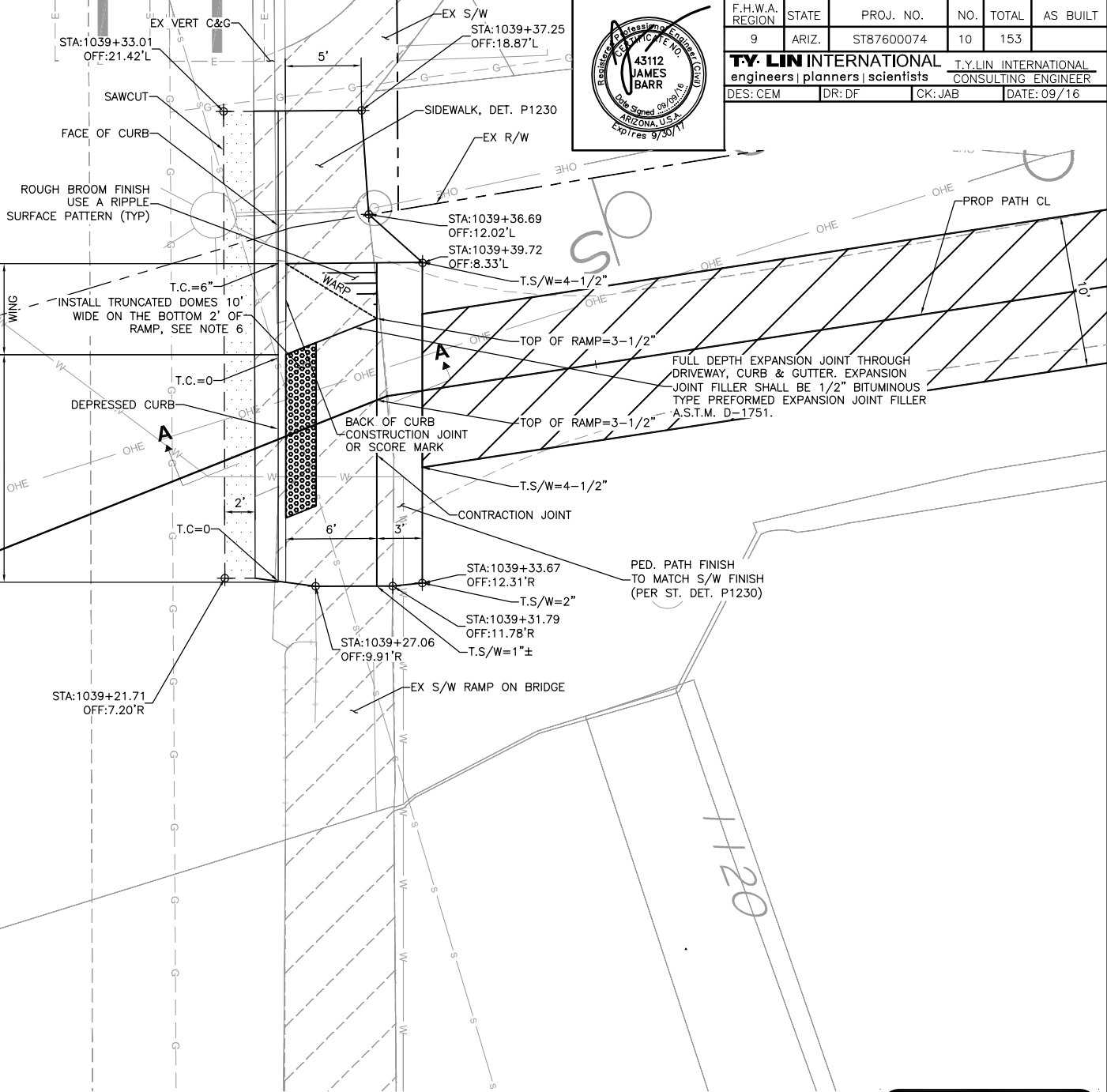
**NOTES:**

1. EXPANSION JOINTS SHALL BE PLACED ALONG ALL CONNECTIONS TO EXISTING CONCRETE.
2. CURB AND DEPRESSED CURB SHOWN SHALL BE INCLUDED IN AREA MEASUREMENT FOR RAMP, MEASURED ON A SQUARE FEET BASIS. SIDEWALK ADJACENT TO RAMP CONNECTING TO EXISTING SIDEWALK SHALL BE INCLUDED IN THE AREA MEASUREMENT FOR RAMP.
3. CONCRETE CURB & GUTTER SHALL BE M.A.G. CLASS A; TOP OF WING TO TOP OF WING.
4. EXPANSION JOINT MATERIAL SHALL BE SECURED IN PLACE PRIOR TO POURING CONCRETE AND SHALL COMPLETELY SEPARATE THE DRIVEWAY SLAB FROM THE SIDEWALK, EXTENDING FROM THE SURFACE TO THE SUBGRADE.
5. CONTROL ELEVATIONS SHOWN ARE IN RELATION TO GUTTER. GUTTER ELEVATION = 0.
6. TRUNCATED DOMES SHALL BE INSTALLED AT THE BACK OF CURB IN A 2-FT DEEP BY 10-FT WIDE AREA. TRUNCATED DOMES TO BE IN ACCORDANCE WITH DETAIL P1232.
7. STATION OFFSET VALUES PROVIDED REFERENCE PROP PATH CL.
8. PROVIDE CONSTRUCTION JOINTS TO MATCH CURB JOINTS (10' SPACING).



## SECTION A-A

SCALE: N.T.S.



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	10	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB	DATE: 09/16	

**T.Y. LIN INTERNATIONAL** engineers | planners | scientists T.Y. LIN INTERNATIONAL  
CONSULTING ENGINEER

DES: CEM	DR: DF	CK: JAB	DATE: 09/16
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Call at least two full working days before you begin excavation.



**ARIZONA 811**  
Arizona Blue Stake, Inc.

In Maricopa County: (602) 263-1100

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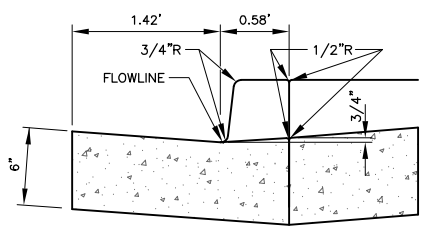
### RAMP DETAILS - 7TH AVENUE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET	TOTAL
DATE: 09/16	DATE: 09/16	DATE: 09/16	NO:	SHEETS
SCALE: N.T.S.			10	153



### DETAIL A

SCALE: N.T.S.

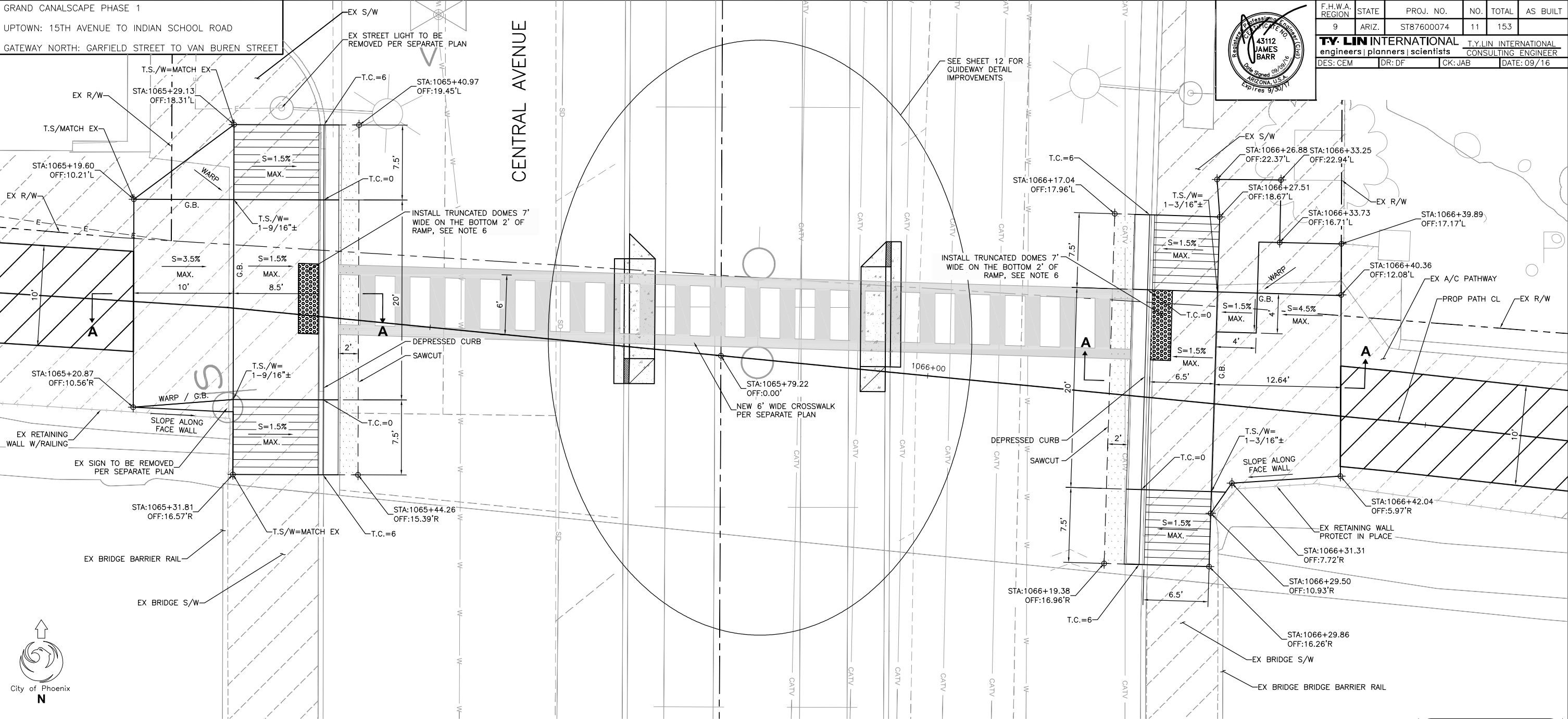
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GRAND CANALSCAPE PHASE 1

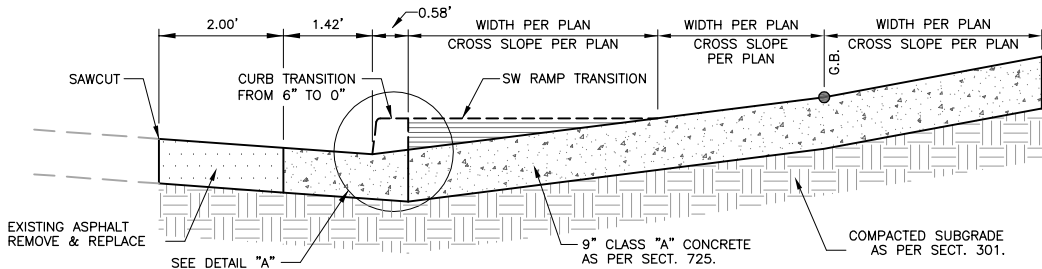
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



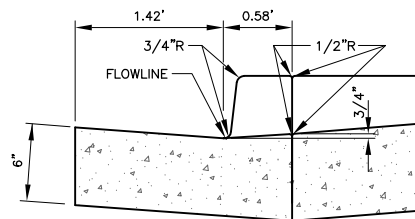
**NOTES:**

1. EXPANSION JOINTS SHALL BE PLACED ALONG ALL CONNECTIONS TO EXISTING CONCRETE.
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5. CONTROL ELEVATIONS SHOWN ARE IN RELATION TO GUTTER. GUTTER ELEVATION = 0.
6. TRUNCATED DOMES SHALL BE INSTALLED AT THE BACK OF CURB IN A 2'-FT DEEP BY 7FT WIDE AREA. TRUNCATED DOMES TO BE IN ACCORDANCE WITH DETAIL P1232.
7. STATION OFFSET VALUES PROVIDED REFERENCE PROP PATH CL.
8. PROVIDE CONSTRUCTION JOINTS TO MATCH CURB JOINTS (10' SPACING).



### SECTION A-A

SCALE: N.T.S.



### DETAIL A

SCALE: N.T.S.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	11	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB	DATE: 09/16	

**T.Y. LIN INTERNATIONAL** engineers | planners | scientists T.Y. LIN INTERNATIONAL  
CONSULTING ENGINEER

DES: CEM	DR: DF	CK: JAB	DATE: 09/16
----------	--------	---------	-------------

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## RAMP DETAILS - CENTRAL AVENUE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET	TOTAL
DATE: 09/16	DATE: 09/16	DATE: 09/16	NO:	SHEETS
SCALE: N.T.S.			11	153

ST87600074, SEPTEMBER 2016

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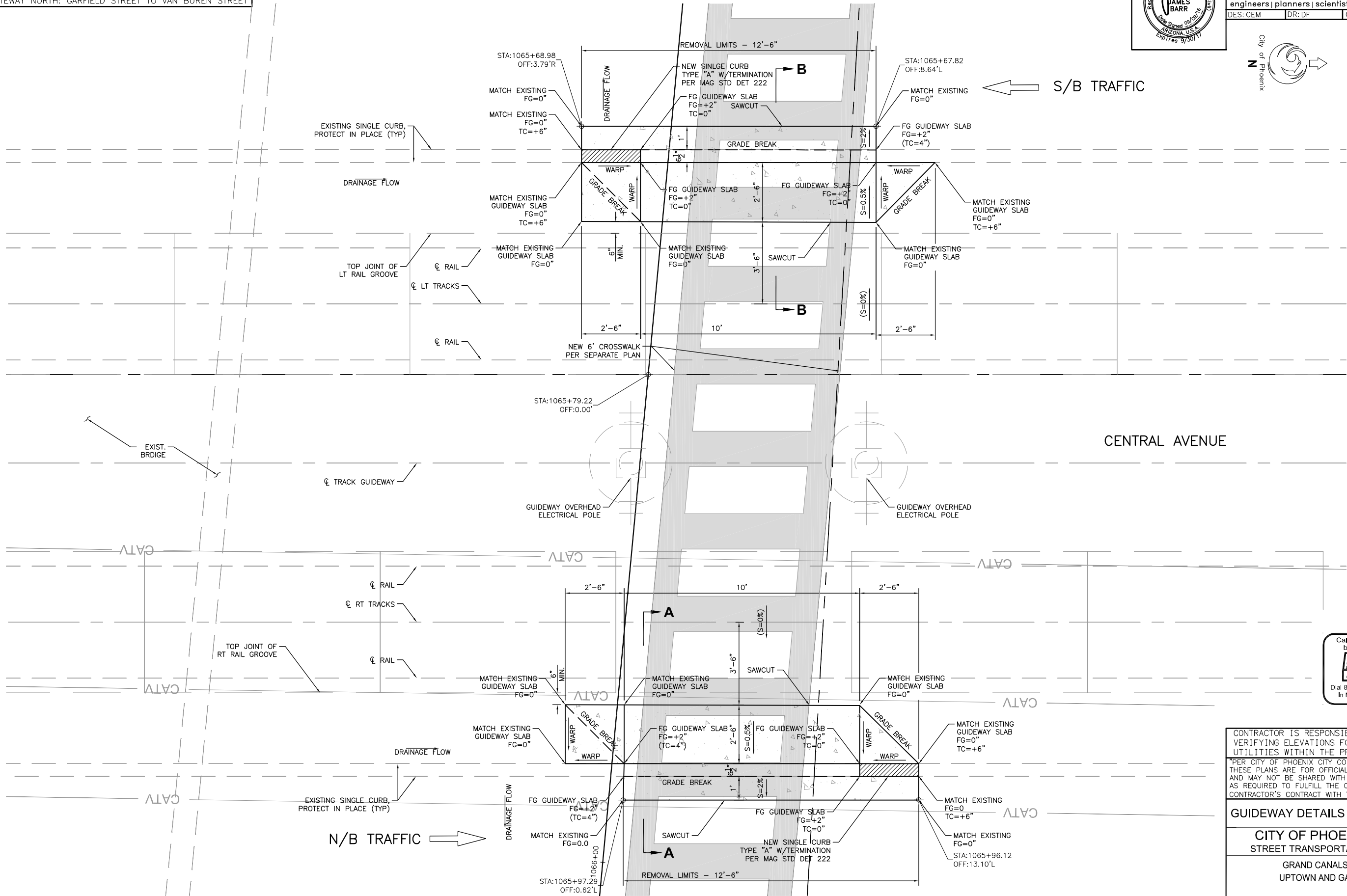
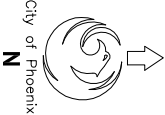
GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	12	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB	DATE: 09 / 16	



SEE SHEET 13 FOR CROSS  
SECTIONS A-A AND B-B.

## TRACK GUIDEWAY MODIFICATION - DETAIL

CENTRAL AVE & N'LY GRAND CANAL - NEW PEDESTRIAN HAWK CROSSING LOCATION  
SCALE: 1"=2' H

CENTRAL AVENUE

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

ial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## GUIDEWAY DETAILS - CENTRAL AVENUE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET	TOTAL
DATE: 09/16	DATE: 09/16	DATE: 09/16	NO:	SHEETS
SCALE: N.T.S.			12	153

ST87600074, SEPTEMBER 2016



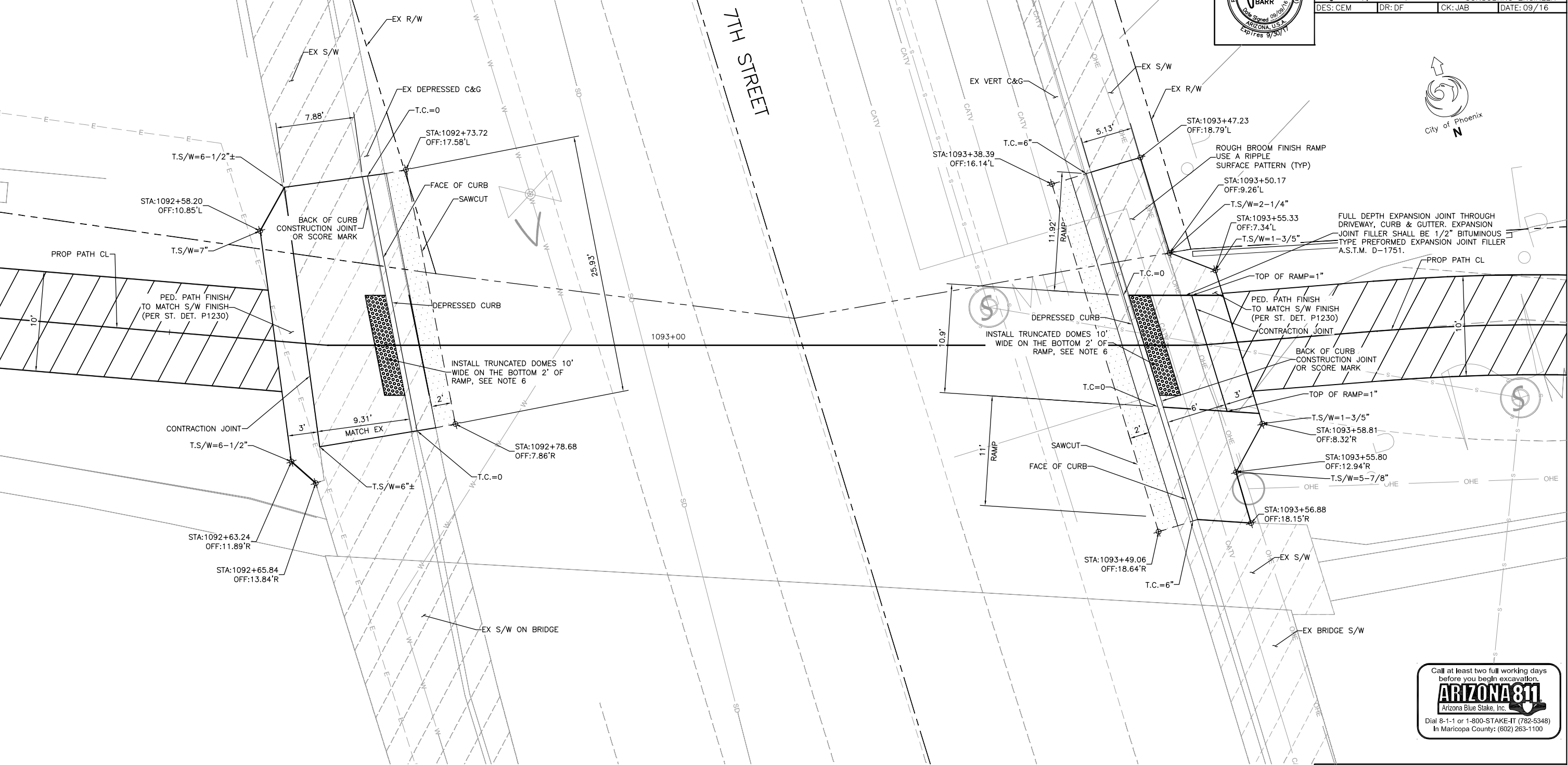
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REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

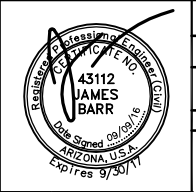


**NOTES:**

1. EXPANSION JOINTS SHALL BE PLACED ALONG ALL CONNECTIONS TO EXISTING CONCRETE.
2. CURB AND DERESSED CURB SHOWN SHALL BE INCLUDED IN AREA MEASUREMENT FOR RAMP, MEASURED ON A SQUARE FEET BASIS. SIDEWALK ADJACENT TO RAMP CONNECTING TO EXISTING SIDEWALK SHALL BE INCLUDED IN THE AREA MEASUREMENT FOR RAMP.
3. CONCRETE CURB & GUTTER SHALL BE M.A.G. CLASS A; TOP OF WING TO TOP OF WING.
4. EXPANSION JOINT MATERIAL SHALL BE SECURED IN PLACE PRIOR TO POURING CONCRETE AND SHALL COMPLETELY SEPARATE THE DRIVEWAY SLAB FROM THE SIDEWALK, EXTENDING FROM THE SURFACE TO THE SUBGRADE.
5. CONTROL ELEVATIONS SHOWN ARE IN RELATION TO GUTTER. GUTTER ELEVATION = 0.
6. TRUNCATED DOMES SHALL BE INSTALLED AT THE BACK OF CURB IN A 2-FT DEEP BY 10-FT WIDE AREA. TRUNCATED DOMES TO BE IN ACCORDANCE WITH DETAIL P1232.
7. STATION OFFSET VALUES PROVIDED REFERENCE PROP PATH CL.
8. PROVIDE CONSTRUCTION JOINTS TO MATCH CURB JOINTS (10' SPACING).
9. COMPACT SUBGRADE AS PER SECT. 301.
10. DRIVEWAY SHALL BE 6" CLASS "A" CONCRETE AS PER SECT. 725.

SEE SHEET 37 FOR PATHWAY PLAN AND PROFILE  
SCALE: 1"=5' H

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	14	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB	DATE: 09/16	



City of Phoenix  
**N**

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## RAMP DETAILS - 7TH STREET

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	14	153

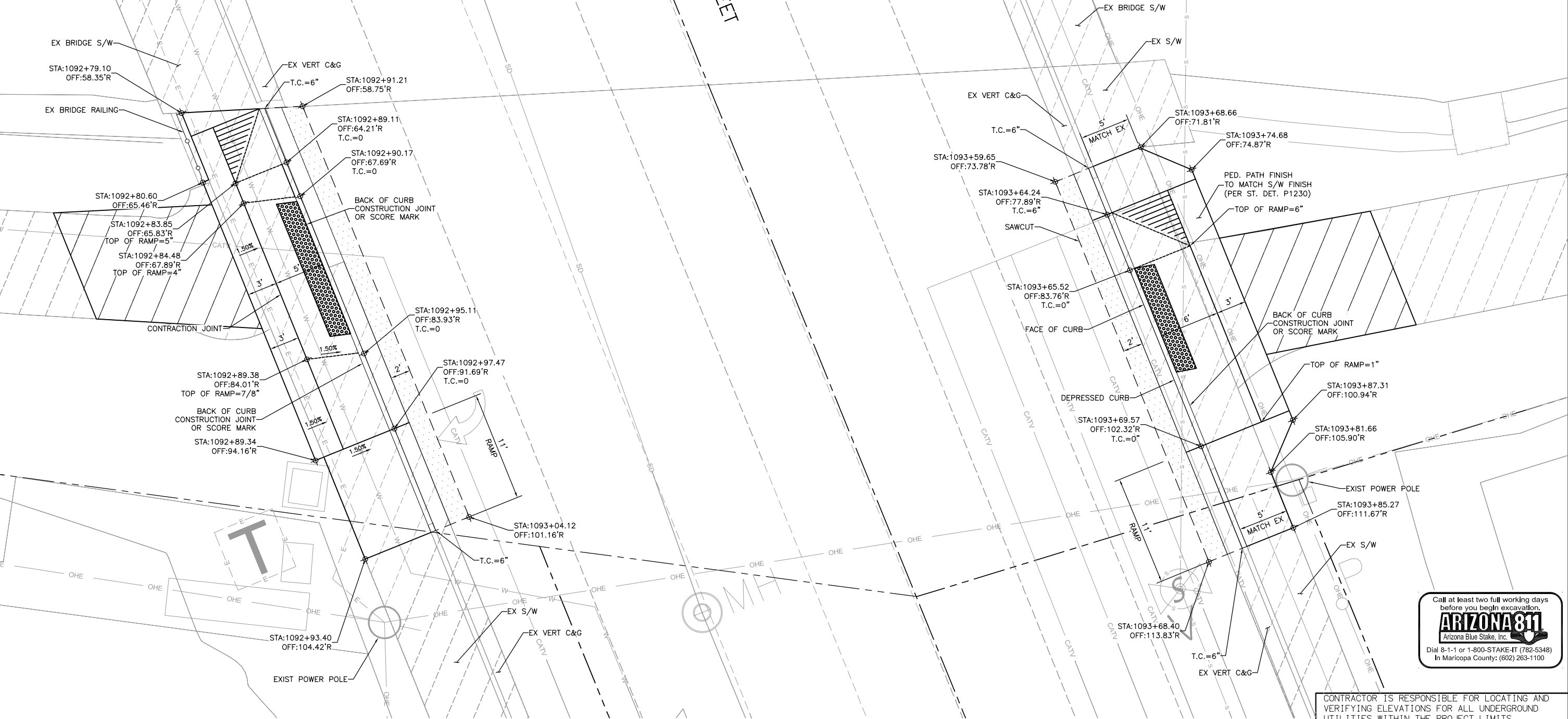
ST87600074, SEPTEMBER 2016

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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



## 7TH STREET SOUTHERN DRIVEWAY - PEDESTRIAN RAMP COMBINATION DETAIL

SEE SHEET 37 FOR PATHWAY PLAN AND PROFILE  
SCALE: 1"=5' H

**NOTES:**

1. EXPANSION JOINTS SHALL BE PLACED ALONG ALL CONNECTIONS TO EXISTING CONCRETE.
2. CURB AND DERESSED CURB SHOWN SHALL BE INCLUDED IN AREA MEASUREMENT FOR RAMP, MEASURED ON A SQUARE FEET BASIS. SIDEWALK ADJACENT TO RAMP CONNECTING TO EXISTING SIDEWALK SHALL BE INCLUDED IN THE AREA MEASUREMENT FOR RAMP.
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5. CONTROL ELEVATIONS SHOWN ARE IN RELATION TO GUTTER. GUTTER ELEVATION = 0.
6. TRUNCATED DOMES SHALL BE INSTALLED AT THE BACK OF CURB IN A 2-FT DEEP BY 10-FT WIDE AREA. TRUNCATED DOMES TO BE IN ACCORDANCE WITH DETAIL P1232.
7. STATION OFFSET VALUES PROVIDED REFERENCE PROP PATH CL.
8. PROVIDE CONSTRUCTION JOINTS TO MATCH CURB JOINTS (10' SPACING).
9. COMPACT SUBGRADE AS PER SECT. 301.
10. DRIVEWAY SHALL BE 6" CLASS "A" CONCRETE AS PER SECT. 725.

**NOTE:**

STATION CONTROL BASED ON PROPOSED PATH CL.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	15	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB	DATE: 09/16	

**TY·LIN INTERNATIONAL** T.Y.LIN INTERNATIONAL  
engineers | planners | scientists CONSULTING ENGINEER

## RAMP DETAILS - 7TH STREET

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET	TOTAL
DATE: 09/16	DATE: 09/16	DATE: 09/16	NO:	SHEETS
SCALE: N.T.S.			15	153

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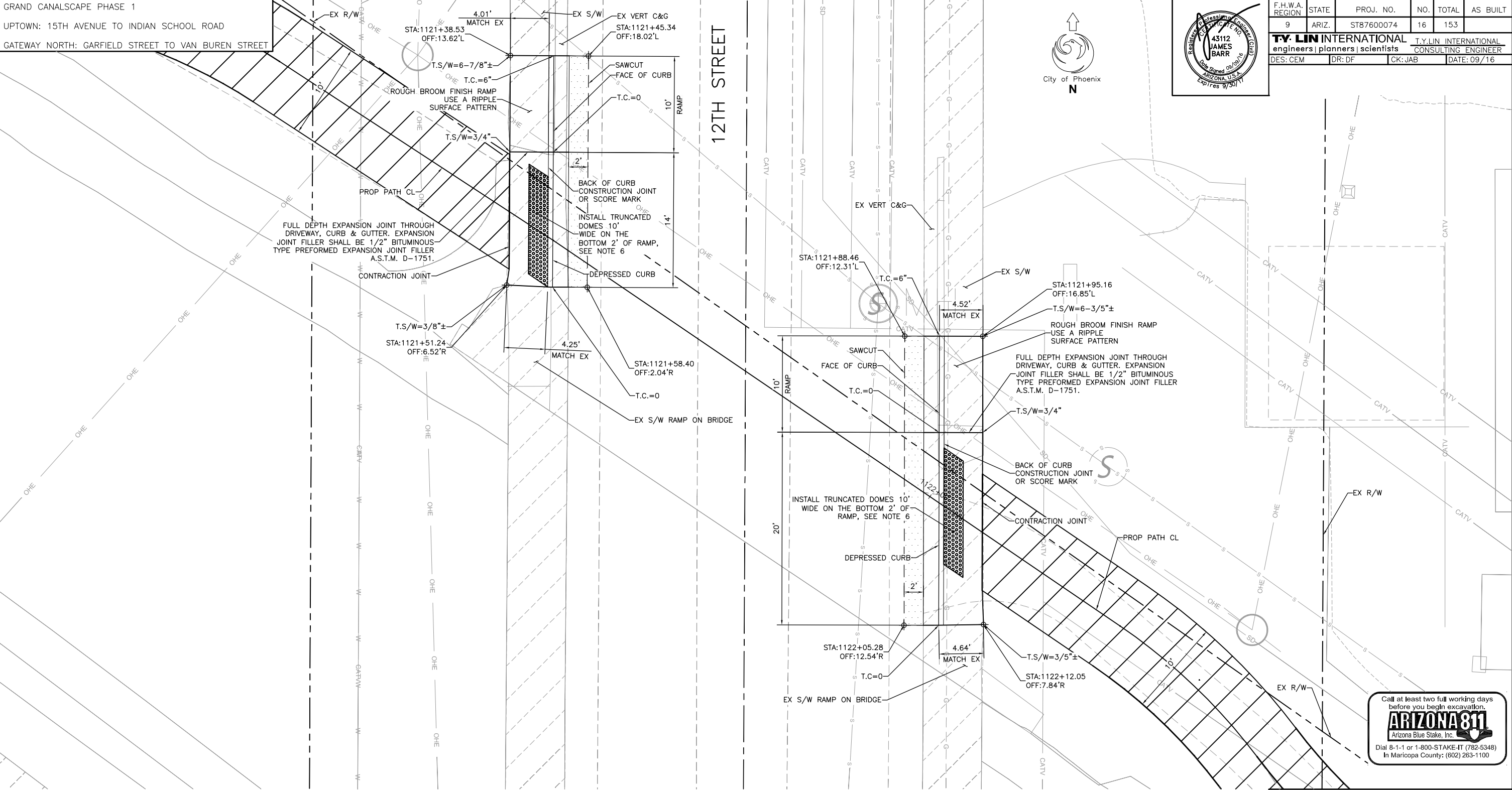
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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



**NOTES:**

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7. STATION OFFSET VALUES PROVIDED REFERENCE PROP PATH CL.
8. PROVIDE CONSTRUCTION JOINTS TO MATCH CURB JOINTS (10' SPACING).
9. COMPACT SUBGRADE AS PER SECT. 301.
10. DRIVEWAY SHALL BE 6" CLASS "A" CONCRETE AS PER SECT. 725.

## 12TH STREET DRIVEWAY - PEDESTRIAN RAMP COMBINATION DETAIL

SEE SHEET 43 FOR PATHWAY PLAN AND PROFILE

SCALE: 1"=5' H

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	16	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: DF	CK: JAB	DATE: 09/16	

**T.Y. LIN INTERNATIONAL** engineers | planners | scientists **T.Y. LIN INTERNATIONAL**  
CONSULTING ENGINEER

DES: CEM	DR: DF	CK: JAB	DATE: 09/16
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### RAMP DETAILS - 7TH STREET

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET	TOTAL
DATE: 09/16	DATE: 09/16	DATE: 09/16	NO:	SHEETS
SCALE: N.T.S.			16	153

SCALE: N.T.S.



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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

LONGVIEW AVENUE

EX VERT C&G

EX S/W

EX SANITARY SEWER MANHOLE PROTECT IN PLACE

STA:1128+53.84 OFF:16.70'L

STA:1128+59.64 OFF:22.32'L

FACE OF CURB

T.C.=6"

SAWCUT

EX R/W

STA:1128+99.52 OFF:17.21'L

SAWCUT

STA:1129+05.36 OFF:22.83'L

T.S/W=6-7/8"±

PROP R/W

SIDEWALK, DET. P1230

STA:1129+18.65 OFF:16.19'L

T.S/W=7-5/8"

EX R/W

EX VERT C&G

EX S/W

EX SANITARY SEWER MANHOLE PROTECT IN PLACE

STA:1128+50.24 OFF:20.40'L

T.S/W=6-7/8"±

STA:1128+48.03 OFF:15.37'L

T.S/W=7-5/8"

ROUGH BROOM FINISH USE A RIPPLE SURFACE PATTERN (TYP)

TOP OF RAMP=6-1/2"

FULL DEPTH EXPANSION JOINT THROUGH DRIVEWAY, CURB & GUTTER. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER A.S.T.M. D-1751.

BACK OF CURB CONSTRUCTION JOINT OR SCORE MARK

CONTRACTION JOINT

INSTALL TRUNCATED DOMES 10' WIDE ON THE BOTTOM 2' OF RAMP, SEE NOTE 6

DEPRESSED CURB

T.C.=0

WING

29+00

BACK OF CURB CONSTRUCTION JOINT OR SCORE MARK

DEPRESSED CURB

INSTALL TRUNCATED DOMES 10' WIDE ON THE BOTTOM 2' OF RAMP, SEE NOTE 6

T.C.=0

WING

TOP OF RAMP=6-1/2"

CONTRACTION JOINT

PROP PATH CL

PED. PATH FINISH TO MATCH S/W FINISH (PER ST. DET. P1230)

FULL DEPTH EXPANSION JOINT THROUGH DRIVEWAY, CURB & GUTTER. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER A.S.T.M. D-1751.

TOP OF RAMP=6-1/2"

T.S/W=7-5/8"

T.S/W=6-7/8"±

STA:1128+77.02 OFF:14.29'R

T.S/W=6-7/8"±

STA:1128+85.03 OFF:18.20'R

EX S/W ON BRIDGE

STA:1128+98.59 OFF:18.04'R

STA:1129+33.23 OFF:17.65'R

ROUGH BROOM FINISH USE A RIPPLE SURFACE PATTERN (TYP)

STA:1129+47.03 OFF:17.49'R

EX S/W ON BRIDGE

City of Phoenix

43112 JAMES BARR

Professional Engineer Seal

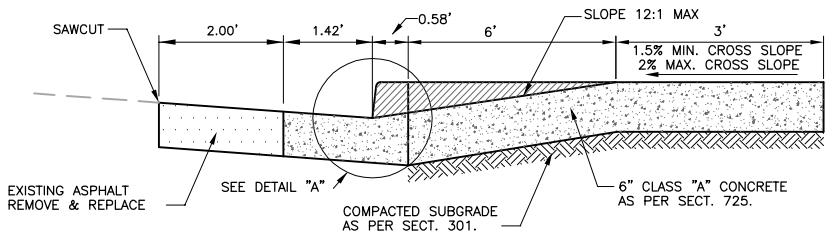
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	17	153	

TY. LIN INTERNATIONAL  
engineers | planners | scientists

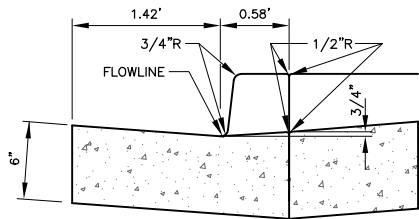
T.Y. LIN INTERNATIONAL  
CONSULTING ENGINEER

DES: CEM DR: DF CK: JAB DATE: 09/16

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**SECTION A-A**  
SCALE: N.T.S.



**DETAIL A**  
SCALE: N.T.S.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	17	153	

**T.Y. LIN INTERNATIONAL**  
engineers | planners | scientists

**T.Y. LIN INTERNATIONAL**  
CONSULTING ENGINEER

DES: CEM	DR: DF	CK: JAB	DATE: 09/16
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## RAMP DETAILS - LONGVIEW AVENUE

### CITY OF PHOENIX, ARIZONA

### STREET TRANSPORTATION DEPARTMENT

### GRAND CANALSCAPE PHASE 1

### UPTOWN AND GATEWAY NORTH

## ST87600074

DR: CEM	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	17	153

SCALE: N.T.S.

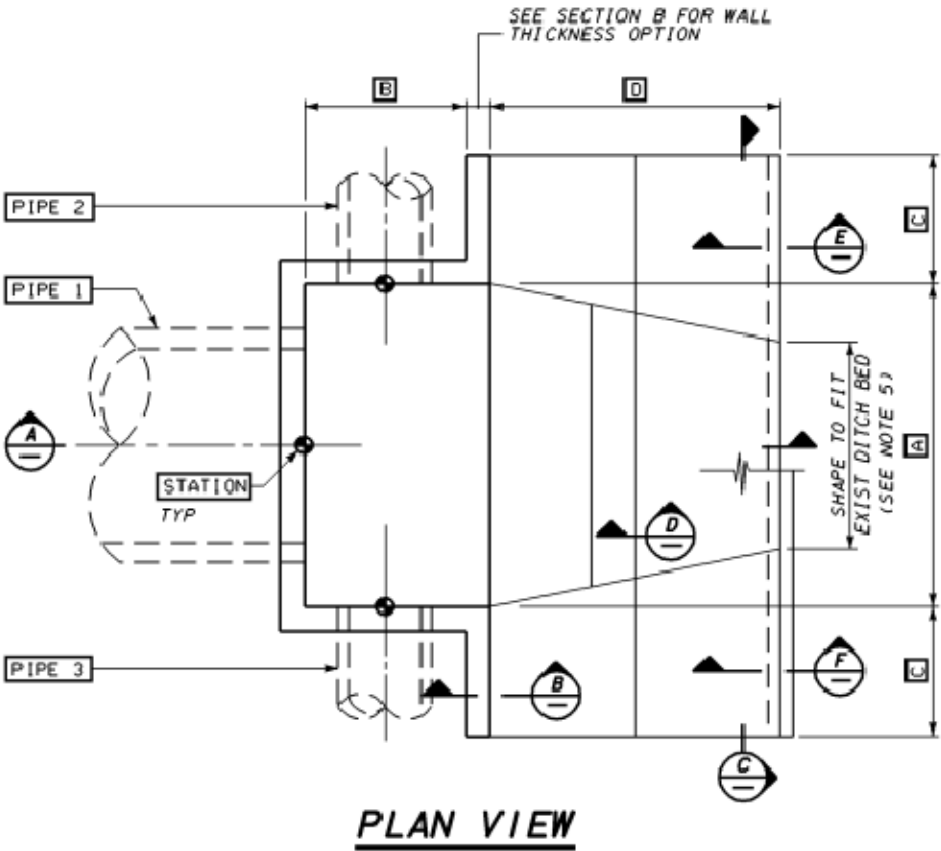
REVISION BY CITY OF PHOENIX		NO.		DESCRIPTION		REV BY		CHK BY		DATE	
		NO.		DESCRIPTION		REV BY		CHK BY		DATE	
REVISION BY CITY OF PHOENIX		NO.		DESCRIPTION		REV BY		CHK BY		DATE	
		NO.		DESCRIPTION		REV BY		CHK BY		DATE	
REVISION BY CITY OF PHOENIX		NO.		DESCRIPTION		REV BY		CHK BY		DATE	
		NO.		DESCRIPTION		REV BY		CHK BY		DATE	

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

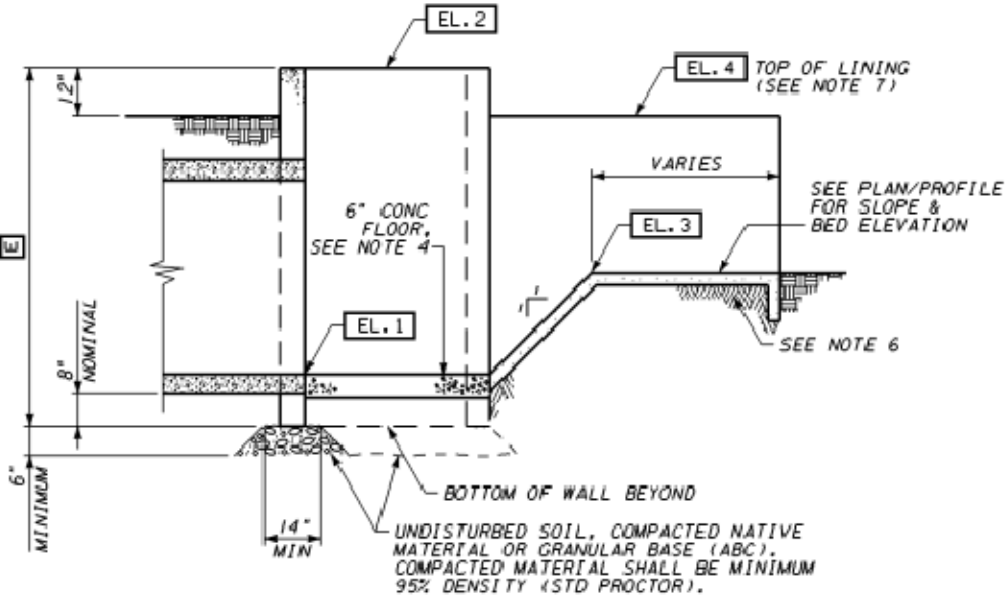
CONSTRUCTION DATA FOR HEADWALL																
HDWL No.	STATION	PLAN/PROFILE REF DWG	PIPE 1		PIPE 2		PIPE 3		EL. 2	EL. 3	EL. 4	A	B	C	D	E
			TYPE	EL. 1	TYPE	EL. 1	TYPE	EL. 1								
1	24+83.72	51	24"	1135.11	--	--	--	--	1134.96	--	--	4.9'	--	--	--	38"
2	33+95.81	53	24"	1135.68	--	--	--	--	1135.43	--	--	4.3'	--	--	--	38"



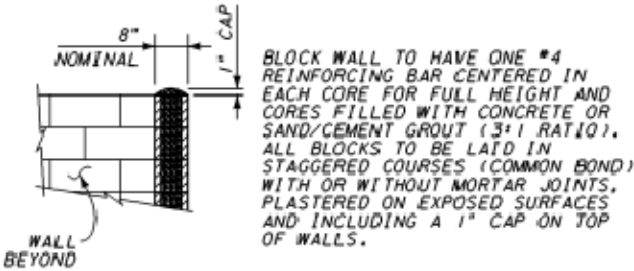
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TY. LIN INTERNATIONAL			T.Y. LIN INTERNATIONAL		
engineers   planners   scientists			CONSULTING ENGINEER		
DES: CEM	DR: DF	CK: JAB	DATE: 09/16		



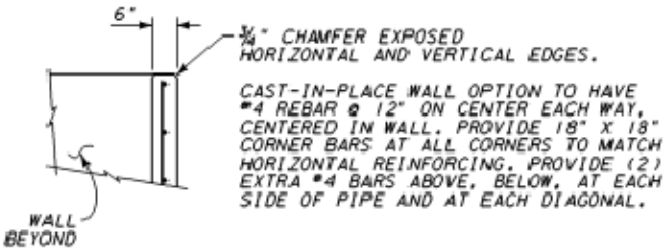
PLAN VIEW



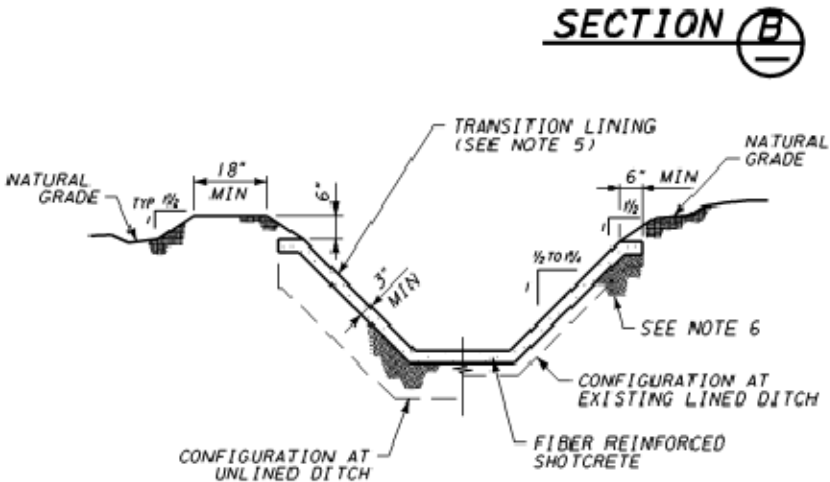
SECTION A



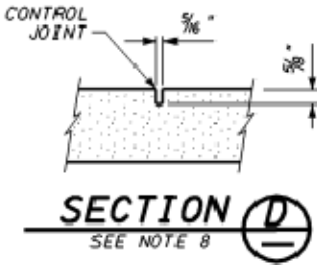
BLOCK WALL OPTION



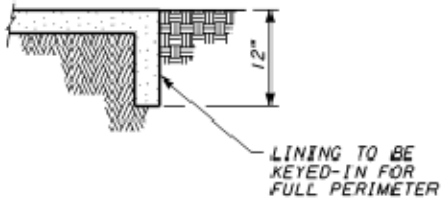
CAST-IN-PLACE WALL OPTION



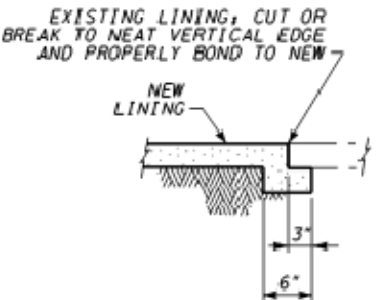
SECTION C



SECTION D



SECTION E



SECTION F

- NOTES**
- SEE PLAN/PROFILE DRAWING(S) FOR ORIENTATION OF HEADWALL(S).
  - UNLESS OTHERWISE NOTED, CONCRETE SHALL BE 3000 PSI (MAG A), SPRAY CONCRETE WITH WHITE CURING COMPOUND.
  - REINFORCING STEEL TO BE ASTM A615 GRADE 60.
  - TOP OF CONCRETE FLOOR TO MATCH THE LOWEST PIPE INVERT (EL. 1).
  - MATCH WIDTH, ELEVATION, AND SLOPE OF EXISTING DITCH, OR AS DIRECTED BY SRP ENGINEERING.
  - SHAPE AND COMPACT TRANSITION LINING SUBGRADE FROM HEADWALL TO 36" PAST UNDISTURBED UNLINED DITCH, OR TO UPSTREAM END OF TRANSITION, WHICHEVER IS GREATER.
  - EXTEND TRANSITION LINING FROM FACE (EL. 4) OF WINGWALLS TO EXISTING DITCH OR CONCRETE LINING BY LENGTH (D), AND MATCH FINISH WITH EXISTING SLIPFORM LINING (IF APPLICABLE).
  - IF TRANSITION LENGTH (D) EXCEEDS 120", TRANSVERSE CONTROL JOINTS ARE REQUIRED AT EQUAL SPACING NOT TO EXCEED 120".

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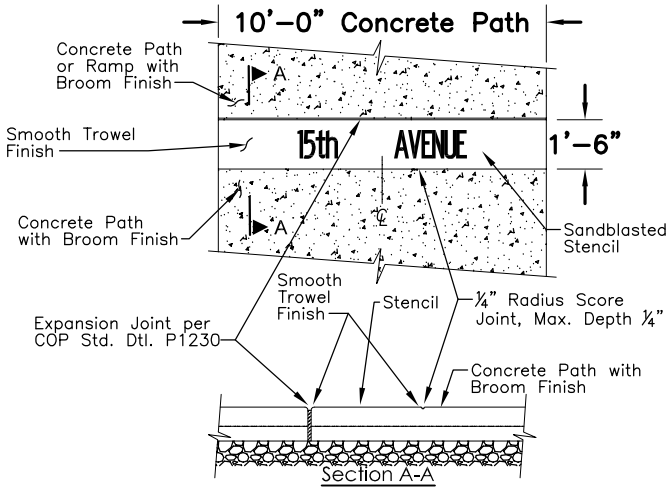
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SRP HEADWALL DETAIL				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: CEM	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
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REVISION BY CITY OF PHOENIX		REV BY	CHK BY	DATE
DESCRIPTION				
NO.				

REVISION BY CITY OF PHOENIX		REV BY	CHK BY	DATE
DESCRIPTION				
NO.				

REVISION BY CITY OF PHOENIX		REV BY	CHK BY	DATE
DESCRIPTION				
NO.				



- SANDBLAST STENCIL NOTES**
- SANDBLAST LETTERS TO 1/8" DEPTH
  - FONT: FEDERAL STANDARD ALPHABET SERIES B.
  - LETTER HEIGHT = 8-INCHES
  - CENTER TEXT COPY HORIZONTALLY WITHIN 10' PATH AND VERTICALLY WITHIN SMOOTH TROVELED FINISH BAND.
  - STENCIL SHALL BE A 3M PREMIUM SERIES RUBBER STENCIL PRODUCT OR APPROVED EQUAL.
  - INSTALLER SHALL HAVE EXPERIENCE ON A MIN. OF 5 PAST PROJECTS.

A STREET NAME STENCIL - DETAIL A

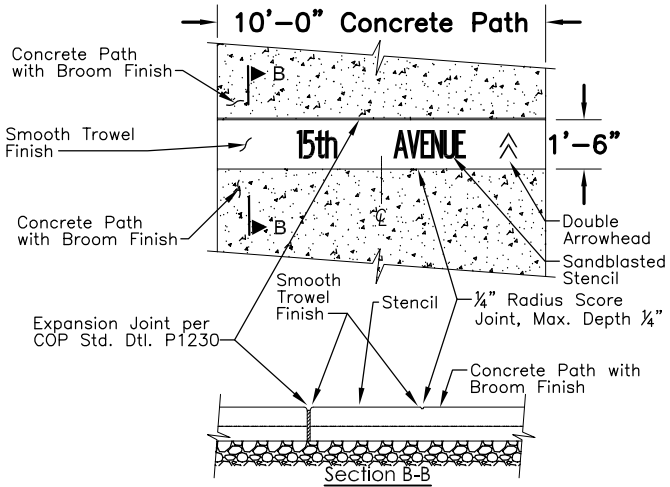
NTS

STREET NAME COPY: NUMBER OF OCCURRENCES:

15th AVENUE	x 1
7th AVENUE	x 2
3rd AVENUE	x 2
CENTRAL AVENUE	x 2
7th STREET	x 2
12th STREET	x 2
LONGVIEW AVE.	x 2
INDIAN SCHOOL	x 1
GARFIELD ST.	x 1
36th STREET	x 2
VAN BUREN ST.	x 1

10'-0" Concrete Path

(SEE PATHWAY PLANS FOR STATION / LOCATIONS)



- SANDBLAST STENCIL NOTES**
- SANDBLAST LETTERS TO 1/8" DEPTH
  - FONT: FEDERAL STANDARD ALPHABET SERIES B
  - LETTER HEIGHT = 8-INCHES
  - CENTER TEXT COPY HORIZONTALLY WITHIN 10' PATH AND VERTICALLY WITHIN SMOOTH TROVELED FINISH BAND.
  - STENCIL SHALL BE A 3M PREMIUM SERIES RUBBER STENCIL PRODUCT OR APPROVED EQUAL.
  - INSTALLER SHALL HAVE EXPERIENCE ON A MIN. OF 5 PAST PROJECTS.

B STREET NAME STENCIL - DETAIL B

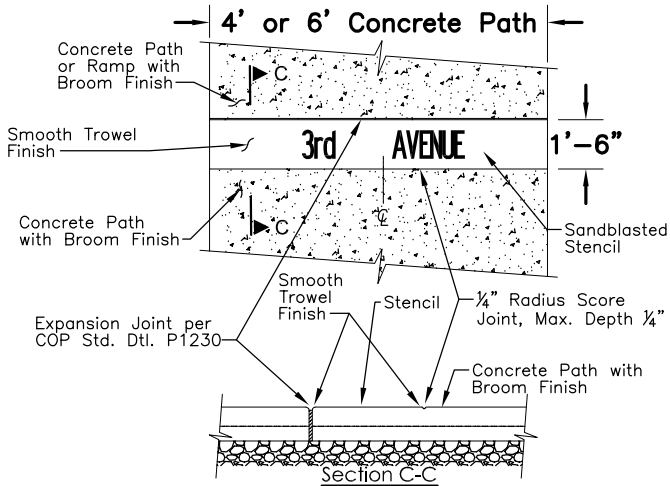
NTS

STREET NAME COPY: NUMBER OF OCCURRENCES:

15th AVENUE	x 1
7th AVENUE	x 2
3rd AVENUE	x 2
CENTRAL AVENUE	x 2
7th STREET	x 2
8th PLACE	x 2
9th STREET	x 2
10th STREET	x 2
12th STREET	x 2
LONGVIEW AVE.	x 2
INDIAN SCHOOL	x 1
GARFIELD ST.	x 1
36th STREET	x 2
37th STREET	x 2
VAN BUREN ST.	x 1

10'-0" Concrete Path

(SEE PATHWAY PLANS FOR STATION / LOCATIONS)



- SANDBLAST STENCIL NOTES**
- SANDBLAST LETTERS TO 1/8" DEPTH
  - FONT: FEDERAL STANDARD ALPHABET SERIES B.
  - LETTER HEIGHT = 8-INCHES
  - CENTER TEXT COPY HORIZONTALLY WITHIN 10' PATH AND VERTICALLY WITHIN SMOOTH TROVELED FINISH BAND.
  - STENCIL SHALL BE A 3M PREMIUM SERIES RUBBER STENCIL PRODUCT OR APPROVED EQUAL.
  - INSTALLER SHALL HAVE EXPERIENCE ON A MIN. OF 5 PAST PROJECTS.

C STREET NAME STENCIL - DETAIL C

NTS

STREET NAME COPY: NUMBER OF OCCURRENCES:

8th PLACE	x 1
9th STREET	x 1
10th STREET	x 1
37th STREET	x 1

4' or 6' Concrete Path

(SEE PATHWAY PLANS FOR STATION / LOCATIONS)



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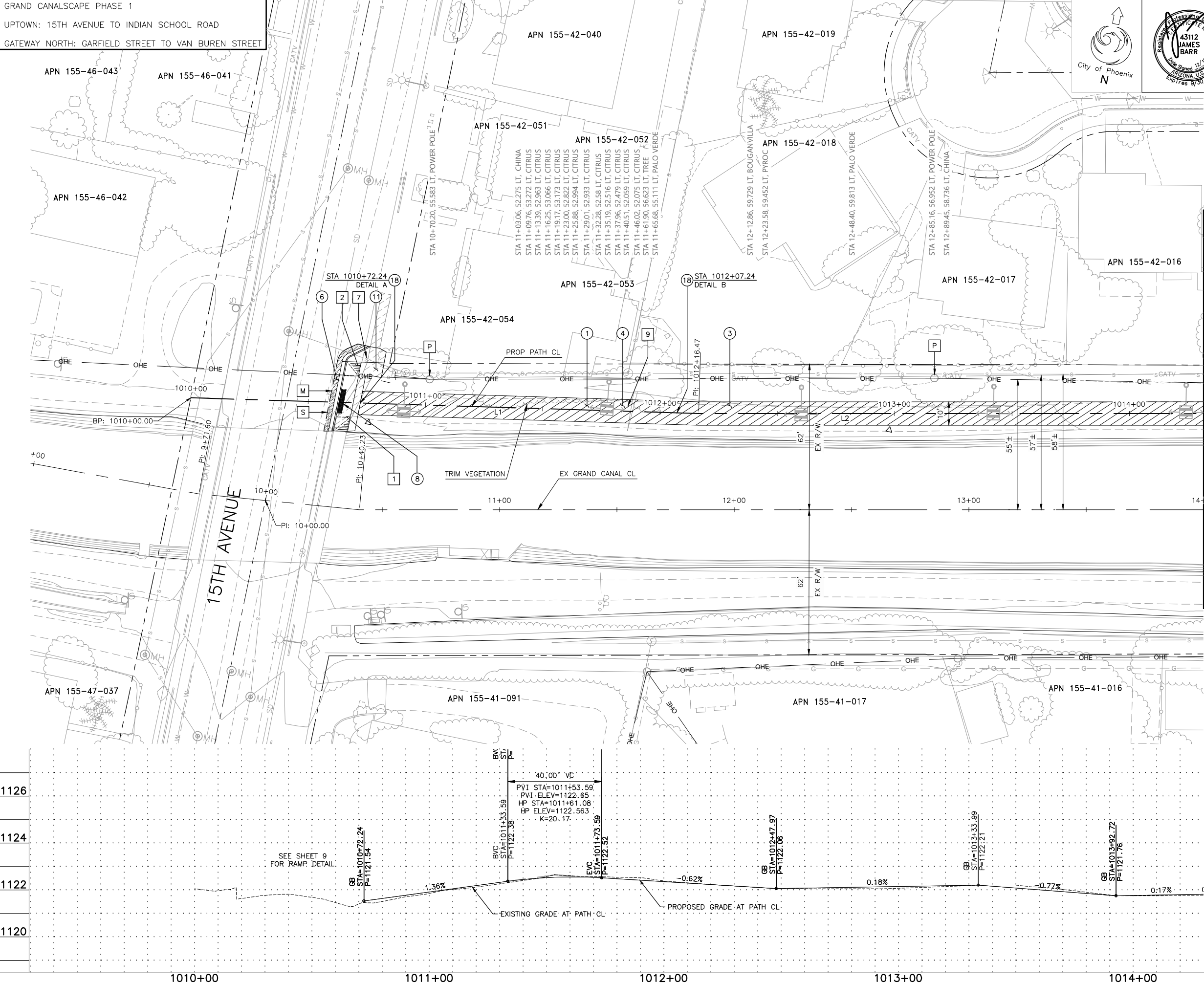
SANDBLAST STENCIL DETAIL				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: CEM DATE: 09/16	DES: CEM DATE: 09/16	CK: JAB DATE: 09/16	SHEET NO: 19	TOTAL SHEETS 153
SCALE: N.T.S.				

NO.	DESCRIPTION	REV BY	CHK BY	DATE

NO.	DESCRIPTION	REV BY	CHK BY	DATE

NO.	DESCRIPTION	REV BY	CHK BY	DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	20	153	

**TY. LIN INTERNATIONAL**  
engineers | planners | scientists  
CONSULTING ENGINEER

DES: CEM    DR: CEM    CK: JAB    DATE: 06/16

**REMOVALS**

NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE PCC SIDEWALK, STEPS, RAMPS, APRONS AND DRIVEWAYS	SF	213
2	REMOVE ASPHALT CONCRETE	SY	9
7	REMOVE EXISTING CURB & GUTTER	LF	40
9	REMOVE AND REPLACE EXISTING GATE	EA	1

**CONSTRUCTION NOTES**

NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	3594
3	AGGREGATE BASE COURSE, 4" THICK	TON	87
4	SUBGRADE PREPARATION.	SY	479
6	ASPHALT CONCRETE FOR ARTERIAL STREETS (TYPE C-3/4, 7" THICK).	SY	9
8	TRUNCATED DOMES PER C.O.P. STD. DET. P1232.	SF	20
11	MODIFIED DRIVEWAY - PEDESTRIAN RAMP COMBINATION PER C.O.P. STD. DET. P1244. SEE SHEET 9.	SF	387
18	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	2

**LINE/CURVE DATA**

Number	Radius	Length	Line/Chord Direction	A Value
L1		216.47	N80° 16' 04.69"E	
L2		456.07	N78° 29' 40.62"E	

△ TBM: 60D NAIL  
⊙ STA: 1010+75.90, 8.17'RT  
TOP ELEV = 1121.48

△ TBM: 60D NAIL  
⊙ STA: 1012+97.67, 7.02'RT  
TOP ELEV = 1122.25

Call at least two full working days before you begin excavation.

**ARIZONA811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

**PATHWAY PLAN AND PROFILE**

**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
**UPTOWN AND GATEWAY NORTH**  
**ST87600074**

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	20	153

SCALE: 1" = 20' HORIZONTAL  
1" = 2' VERTICAL

Christopher Milner TY Lin Half Scale.ctb

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

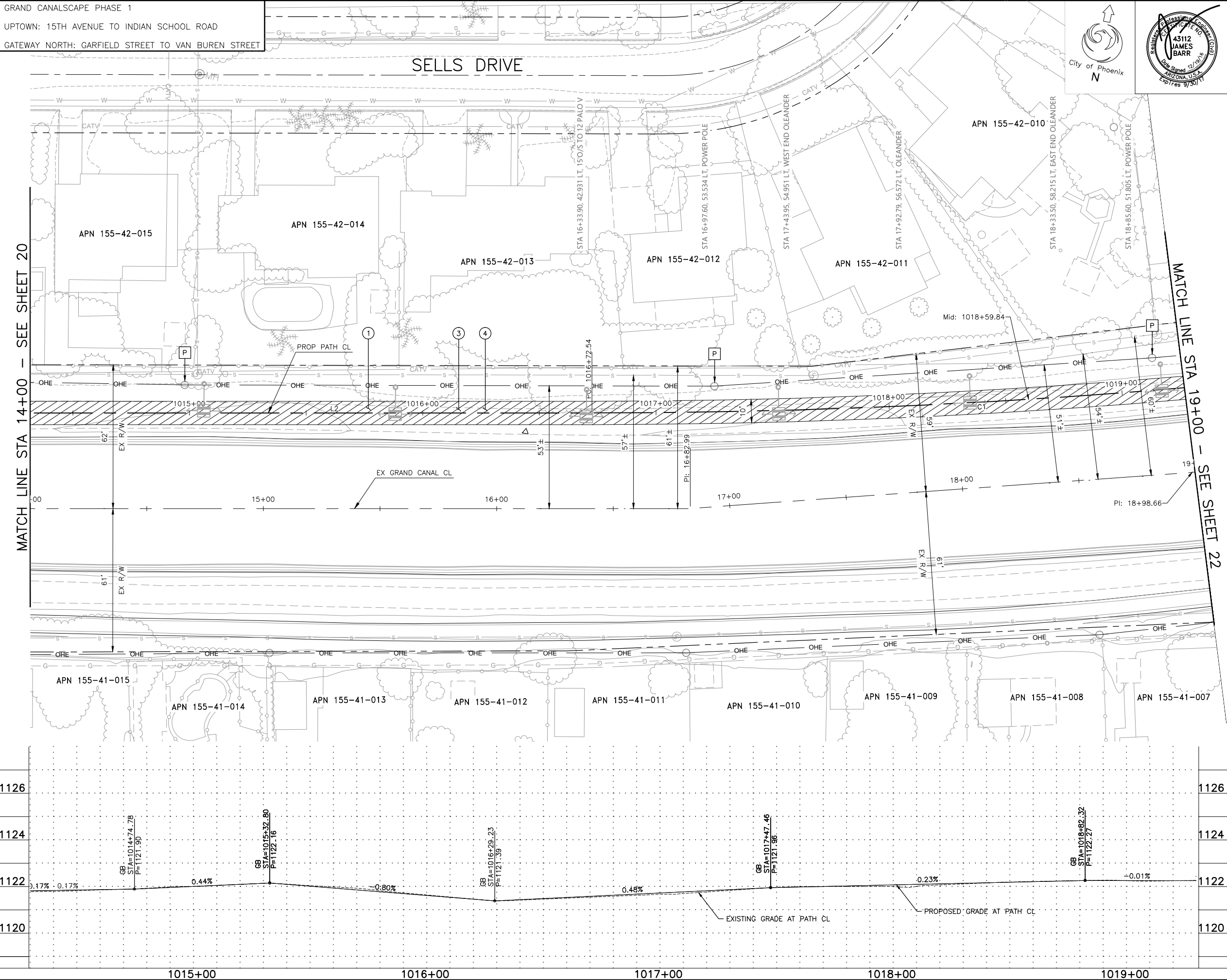
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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	21	153	.
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB	DATE: 06/16	

- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4952
③	AGGREGATE BASE COURSE, 4" THICK	TON	120
④	SUBGRADE PREPARATION.	SY	660

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L2		456.07	N78° 29' 40.62"E	
C1	3000.00	374.61	N74° 55' 02.32"E	

△ TBM: 60D NAIL  
© STA: 1016+44.05, 8.07'RT  
TOP ELEV = 1121.73



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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## PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			21	153

ST87600074. OCTOBER 2016

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

CAMPBELL AVENUE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	22	153	
T.Y.LIN INTERNATIONAL engineers   planners   scientists			T.Y.LIN INTERNATIONAL CONSULTING ENGINEER		
DES: CEM	DR: CEM	CK: JAB	DATE: 06/16		

- ☐ M MATCH EXISTING  
☐ P PROTECT IN PLACE  
☐ S SAWCUT 2' AND MATCH EXISTING

NO.	DESCRIPTION	UNIT	QTY.
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CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4965
3	AGGREGATE BASE COURSE, 4" THICK	TON	120
4	SUBGRADE PREPARATION.	SY	662

LINE/CURVE DATA

Number	Radius	Length	Line/Chord Direction	A Value
C1	3000.00	374.61	N74° 55' 02.32"E	
L3		260.46	N71° 20' 24.03"E	
C2	1500.00	143.21	N68° 36' 17.64"E	

- △ TBM: 60D NAIL  
● STA: 1020+49.26, 6.99'RT  
TOP ELEV = 1122.22
- △ TBM: 60D NAIL  
● STA: 1023+42.82, 5.75'RT  
TOP ELEV = 1122.41



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

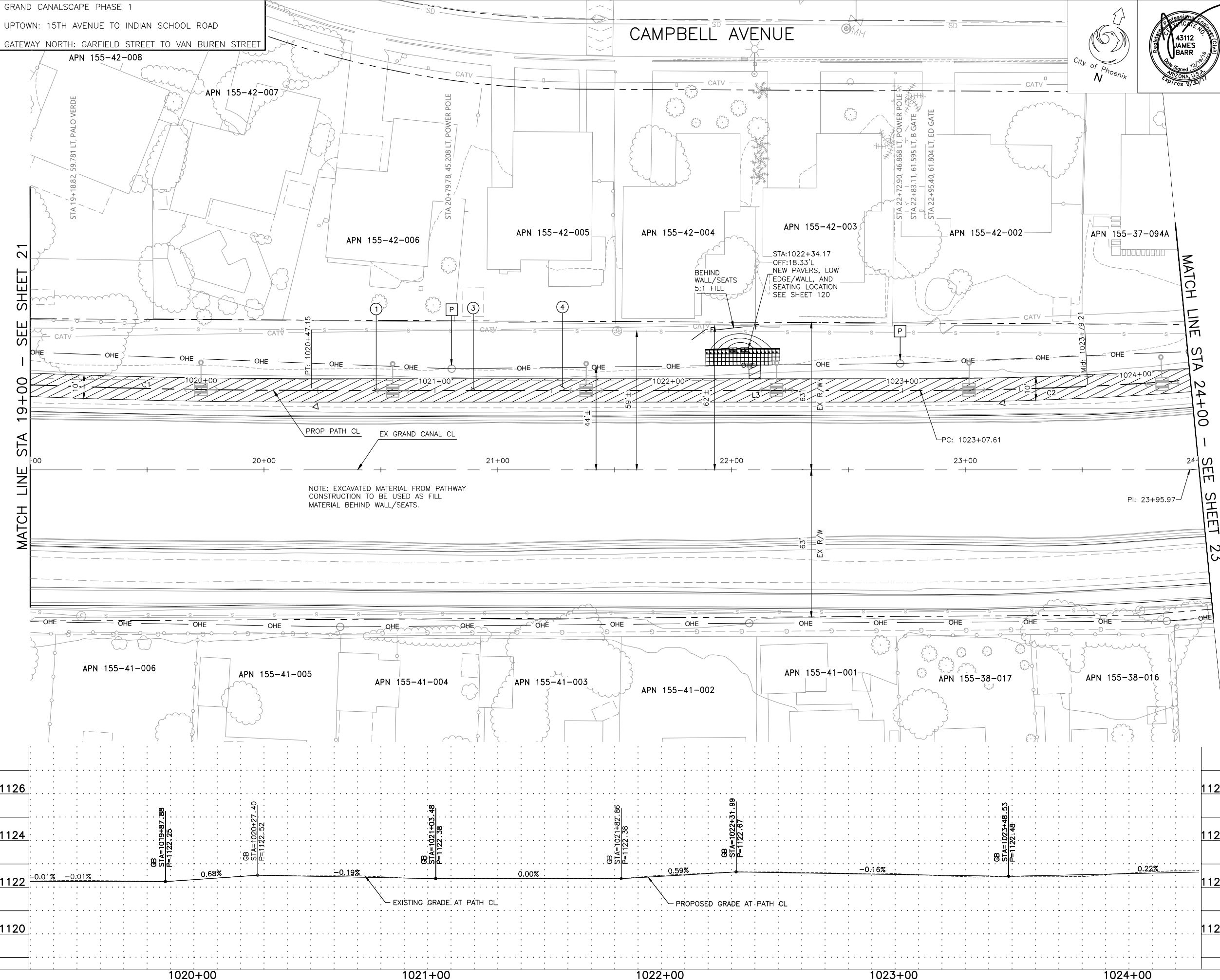
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PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	22	153
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL				





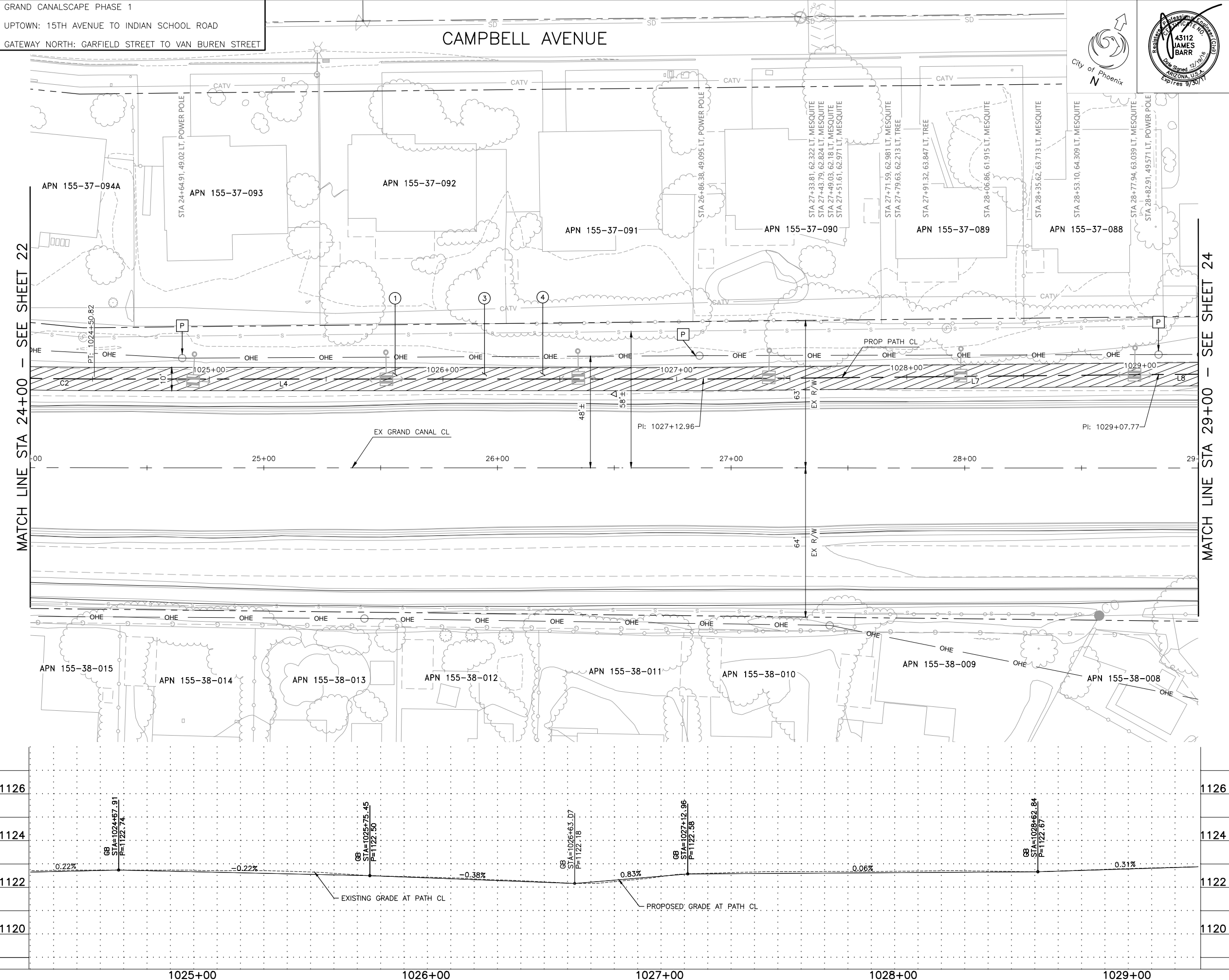
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NO.	DESCRIPTION	REV BY	CHK BY	DATE

NO.	DESCRIPTION	REV BY	CHK BY	DATE

NO.	DESCRIPTION	REV BY	CHK BY	DATE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	23	153	

**TY. LIN INTERNATIONAL**  
engineers | planners | scientists  
CONSULTING ENGINEER

DES: CEM DR: CEM CK: JAB DATE: 06/16

M MATCH EXISTING  
P PROTECT IN PLACE  
S SAWCUT 2' AND MATCH EXISTING

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5000
③	AGGREGATE BASE COURSE, 4" THICK	TON	121
④	SUBGRADE PREPARATION.	SY	667

LINE/CURVE DATA					
Number	Radius	Length	Line/Chord Direction	A Value	
C2	1500.00	143.21	N68° 36' 17.64"E		
L4		260.64	N65° 52' 11.26"E		
L7		194.81	N65° 16' 53.66"E		
L8		246.53	N65° 30' 02.50"E		

△ TBM: 60D NAIL  
@ STA: 1026+75.81, 7.84'RT  
TOP ELEV = 1122.08

Call at least two full working days before you begin excavation.

**ARIZONA811**  
Arizona Blue Stake, Inc.  
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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**PATHWAY PLAN AND PROFILE**

**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
**UPTOWN AND GATEWAY NORTH**  
**ST87600074**

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	23	153

SCALE: 1" = 20' HORIZONTAL  
1" = 2' VERTICAL

ST87600074, OCTOBER 2016



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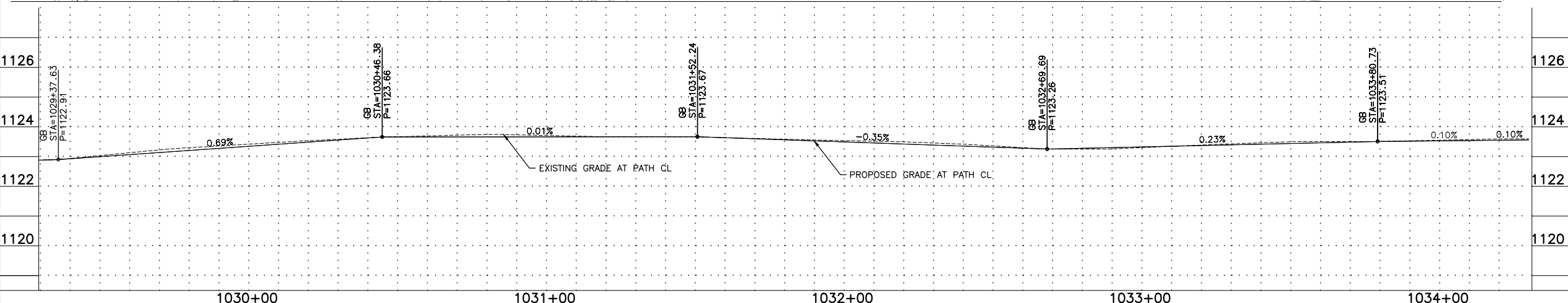
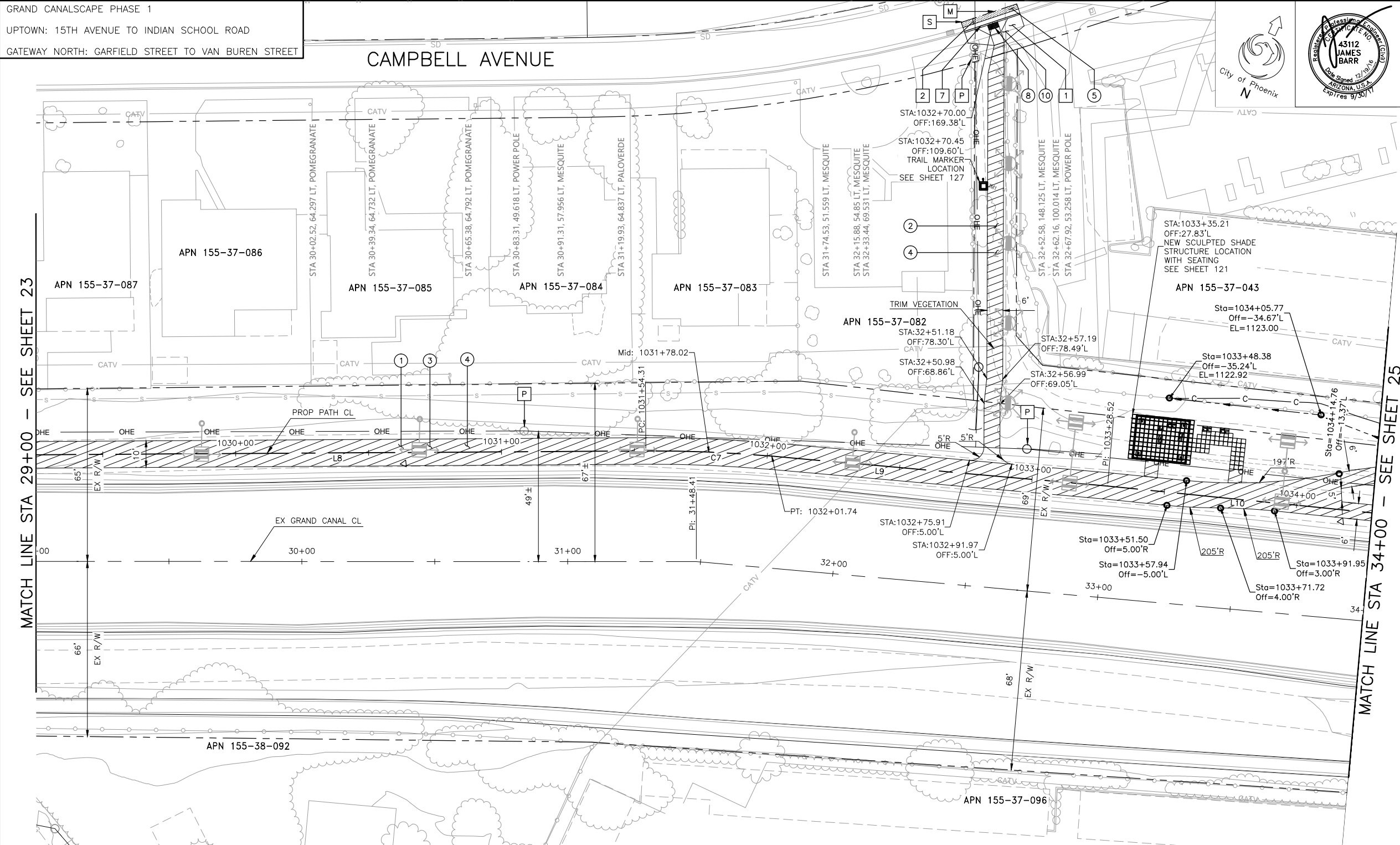
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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

CAMPBELL AVENUE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	24	153	.
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<u>T.Y. LIN INTERNATIONAL</u> CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB	DATE: 06/16	
<div> <input type="checkbox"/> M MATCH EXISTING         </div> <div> <input type="checkbox"/> P PROTECT IN PLACE         </div> <div> <input type="checkbox"/> S SAWCUT 2' AND MATCH EXISTING         </div>					

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE PCC SIDEWALK, STEPS, RAMPS, APRONS AND DRIVEWAYS	SF	96
2	REMOVE ASPHALT CONCRETE	SY	5
7	REMOVE EXISTING CURB & GUTTER	LF	22

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5272
②	CONCRETE S/W PER C.O.P. STD. DET. P1230, 4" THICK, WIDTH PER PLAN.	SF	942
③	AGGREGATE BASE COURSE, 4" THICK	TON	127
④	SUBGRADE PREPARATION.	SY	839
⑤	ASPHALT CONCRETE FOR LOCAL STREETS (TYPE C-3/4, 4" THICK).	SY	5
⑧	TRUNCATED DOMES PER C.O.P. STD. DET. P1232.	SF	8
⑩	CURB RAMP WITH 4" ROLL CURB PER C.O.P. STD. DET. P1241-3.	SF	190

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L8		246.53	N65° 30' 02.50"E	
C7	500.00	47.43	N68° 13' 06.66"E	
L9		126.78	N70° 56' 10.81"E	
L10		400.03	N71° 39' 08.98"E	

△ TBM: 60D NAIL  
 @ STA: 1030+63.32, 4.17'RT  
 TOP ELEV = 1123.44

△ TBM: 60D NAIL  
@ STA: 1034+17.30, 4.36'RT  
TOP ELEV = 1123.31



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## PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
DOWNTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES:CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE:06/16	DATE:06/16	DATE:06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			24	153

ST87600074, OCTOBER 2016

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Christopher Miller

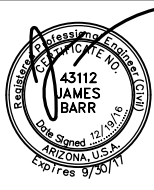
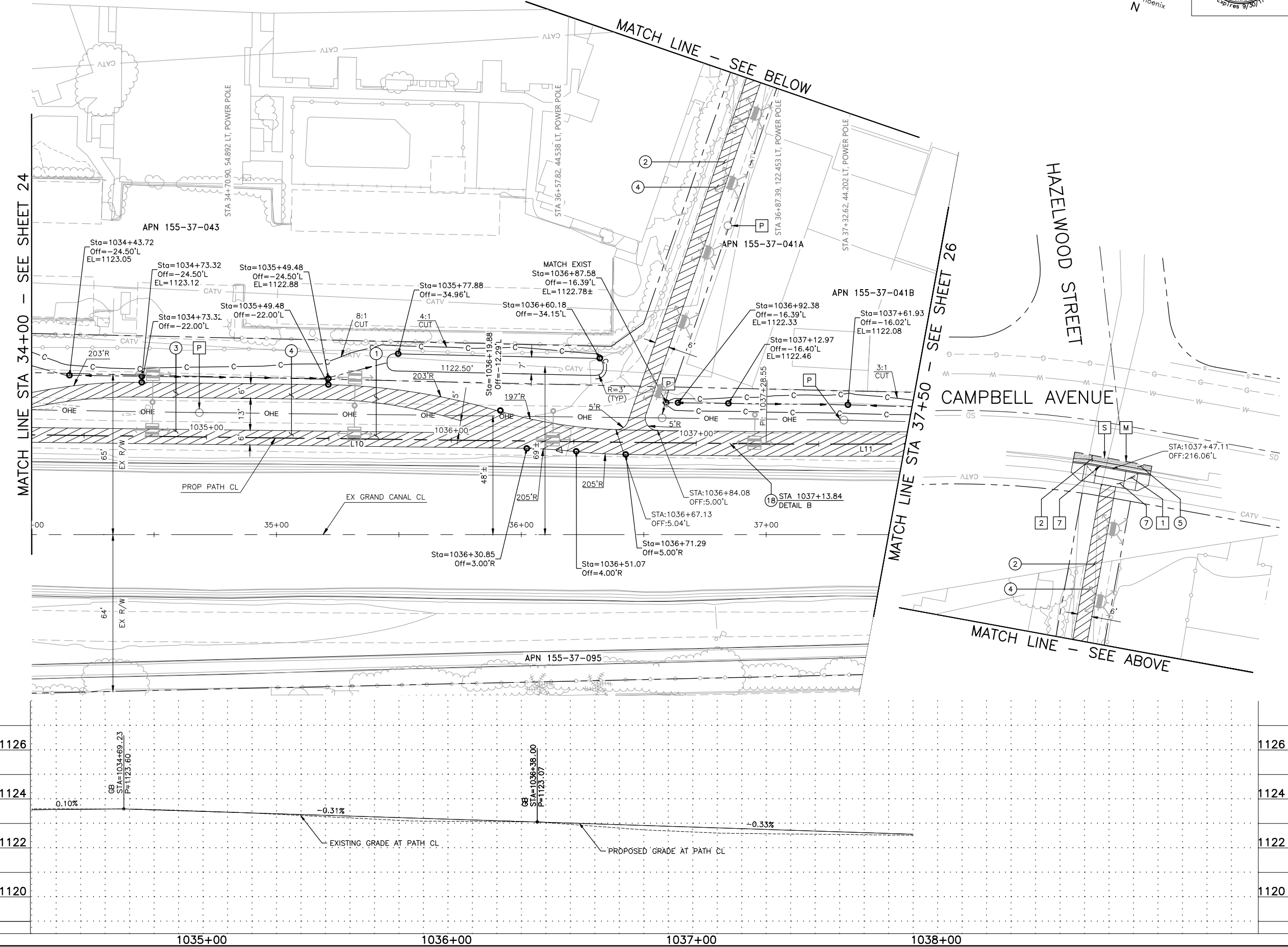
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NO.	DESCRIPTION	REV BY	CHK BY	DATE

NO.	DESCRIPTION	REV BY	CHK BY	DATE

NO.	DESCRIPTION	REV BY	CHK BY	DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	25	153	

**TY. LIN INTERNATIONAL**  
engineers | planners | scientists  
CONSULTING ENGINEER

DES: CEM    DR: CEM    CK: JAB    DATE: 06/16

- ☐ M MATCH EXISTING  
☐ P PROTECT IN PLACE  
☐ S SAWCUT 2' AND MATCH EXISTING

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE PCC SIDEWALK, STEPS, RAMPS, APRONS AND DRIVEWAYS	SF	129
2	REMOVE ASPHALT CONCRETE	SY	7
7	REMOVE EXISTING CURB & GUTTER	LF	32

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4504
2	CONCRETE S/W PER C.O.P. STD. DET. P1230, 4" THICK, WIDTH PER PLAN.	SF	1308
3	AGGREGATE BASE COURSE, 4" THICK	TON	109
4	SUBGRADE PREPARATION.	SY	810
5	ASPHALT CONCRETE FOR LOCAL STREETS (TYPE C-3/4, 4" THICK).	SY	7
7	CONCRETE DRIVEWAY ENTRANCE PER C.O.P. STD. DET. 1255-1	SF	275
18	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	1

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L10		400.03	N71° 39' 08.98"E	
L11		123.50	N70° 56' 10.81"E	

△ TBM: 60D NAIL  
● STA: 1036+44.38, 3.55'RT  
TOP ELEV = 1123.19



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"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	25	153

SCALE: 1" = 20' HORIZONTAL  
1" = 2' VERTICAL

ST87600074, OCTOBER 2016

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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

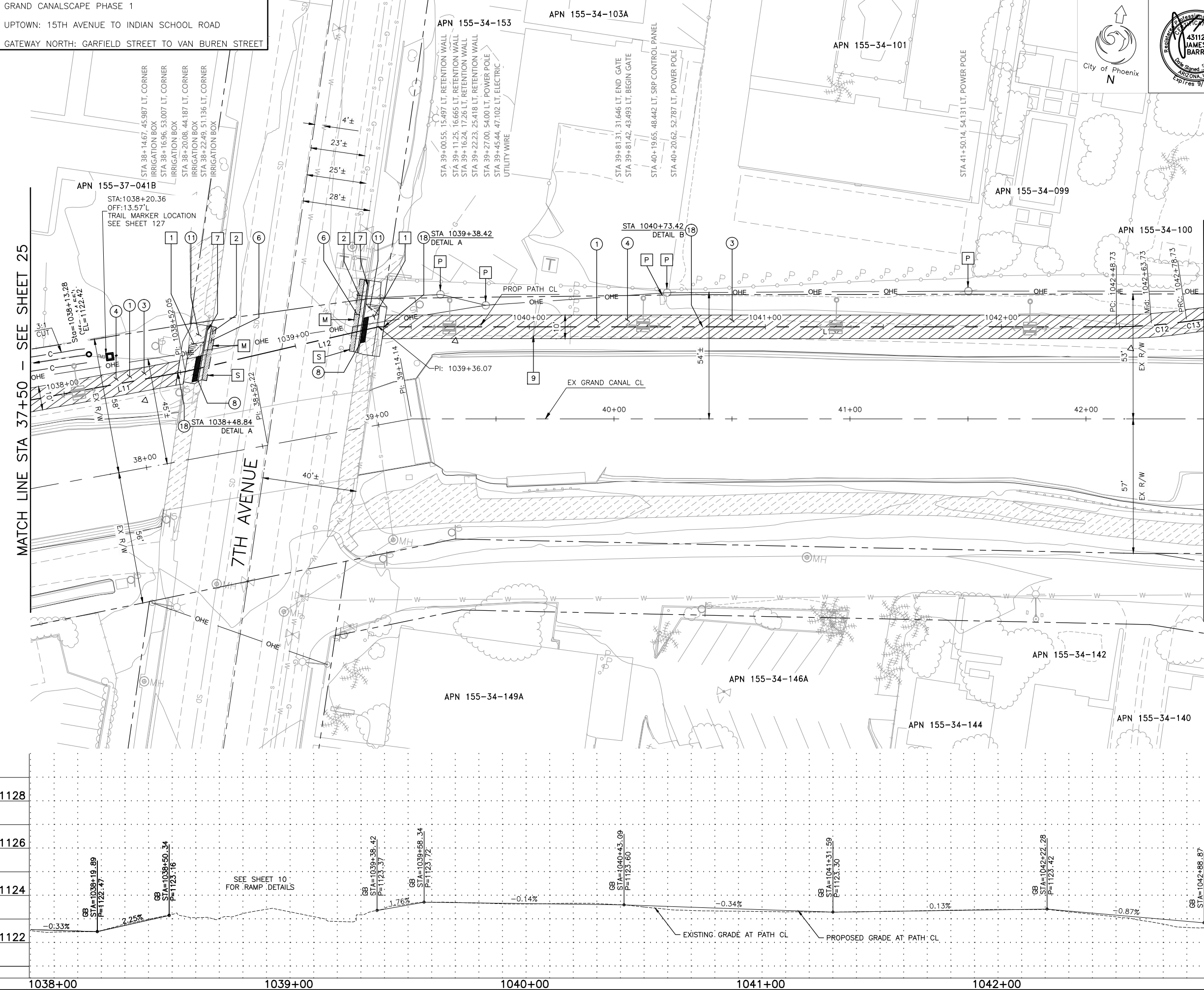
REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	26	153	.

<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists	<u>T.Y.LIN INTERNATIONAL</u> CONSULTING ENGINEER
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DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
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- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE PCC SIDEWALK, STEPS, RAMPS, APRONS AND DRIVEWAYS	SF	446
2	REMOVE ASPHALT CONCRETE	SY	12
7	REMOVE EXISTING CURB & GUTTER	LF	55
9	REMOVE AND REPLACE EXISTING GATE	EA	1

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4180
③	AGGREGATE BASE COURSE, 4" THICK	TON	101
④	SUBGRADE PREPARATION.	SY	557
⑥	ASPHALT CONCRETE FOR ARTERIAL STREETS (TYPE C-3/4, 7" THICK).	SY	12
⑧	TRUNCATED DOMES PER C.O.P. STD. DET. P1232.	SF	44
⑪	MODIFIED DRIVEWAY - PEDESTRIAN RAMP COMBINATION PER C.O.P. STD. DET. P1244. SEE SHEET 10.	SF	574
⑬	SANDBLAST SHEET NAME STENCIL PER DETAIL SHEET 19.	EA	3

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L11		123.50	N70° 56' 10.81"E	
L12		84.02	N68° 17' 08.82"E	
L13		312.66	N81° 20' 37.39"E	
C12	200.00	30.00	N77° 02' 47.53"E	
C13	200.00	30.00	N77° 02' 47.53"E	

- △ TBM: 60D NAIL  
Ⓢ STA: 1038+33.10, 8.98'RT  
TOP ELEV = 1122.79
- △ TBM: 60D NAIL  
Ⓢ STA: 1039+68.67, 6.01'RT  
TOP ELEV = 1123.88
- △ TBM: 60D NAIL  
Ⓢ STA: 1042+54.61, 9.35'RT  
TOP ELEV = 1123.37

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			26	153

ST87600074, OCTOBER 2016

MATCH LINE STA 42+50 - SEE SHEET 26

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE SW PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5020
③	AGGREGATE BASE COURSE, 4" THICK	TON	121
④	SUBGRADE PREPARATION.	SY	669

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
C13	200.00	30.00	N77° 02' 47.53"E	
L16		20.00	N81° 20' 37.39"E	
C14	200.00	30.00	N85° 38' 27.25"E	
C15	200.00	30.00	N85° 38' 27.25"E	
L17		112.54	N81° 20' 37.39"E	
C16	5000.00	236.63	N82° 41' 58.24"E	
L18		200.20	N84° 03' 19.10"E	

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**

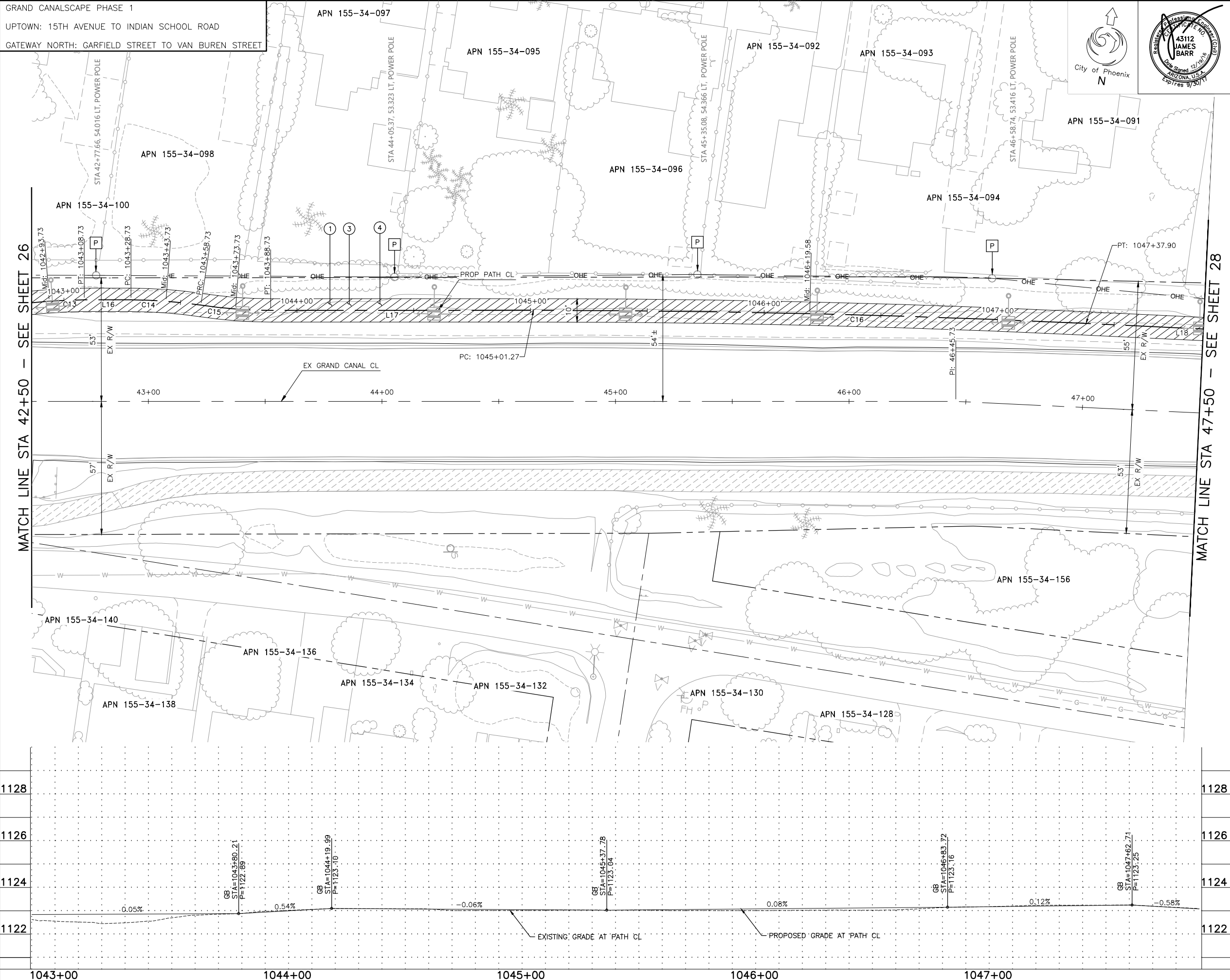
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

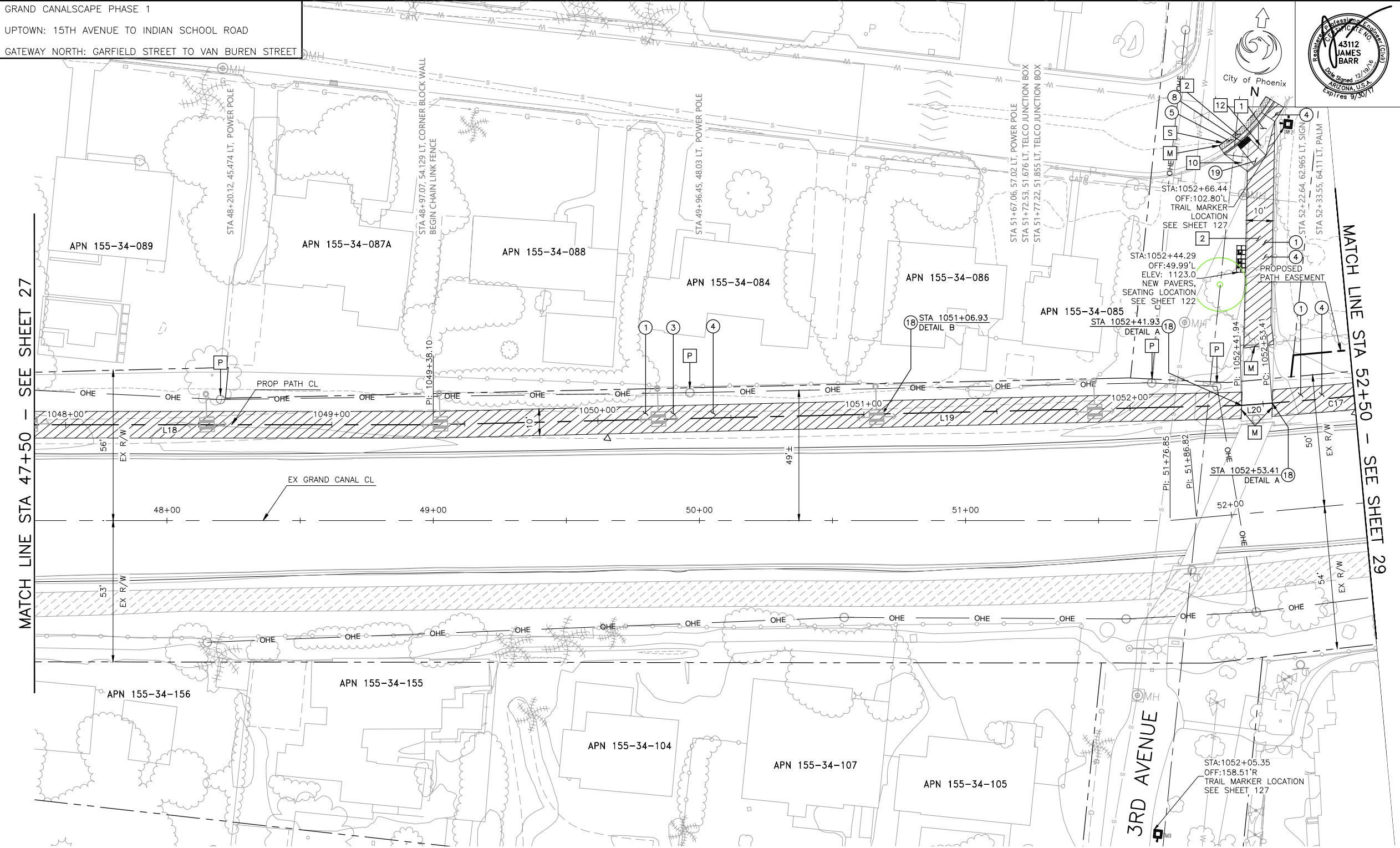
DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			27	153



ST87600074, OCTOBER 2016



MATCH LINE STA 47+50 - SEE SHEET 27

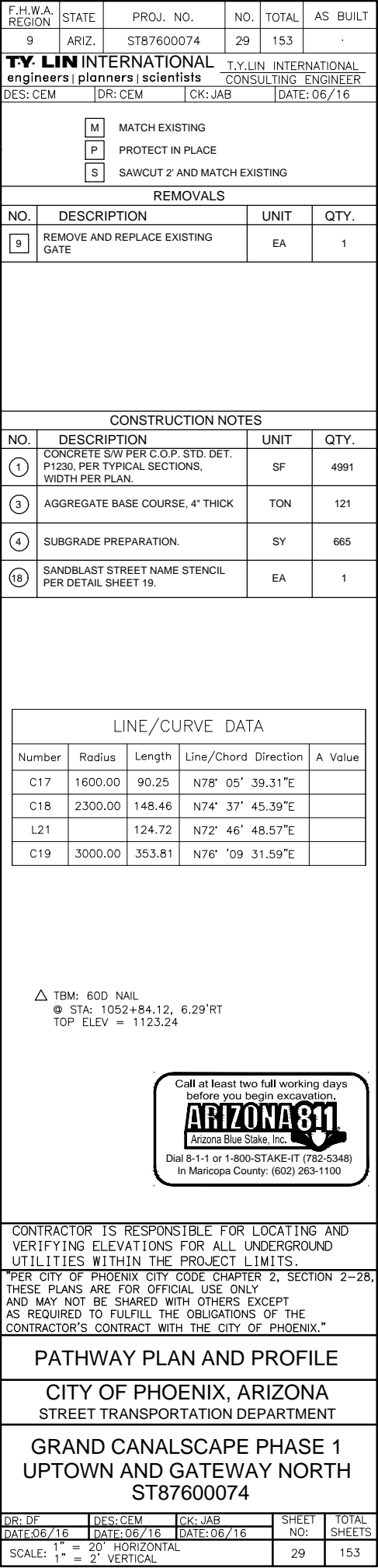
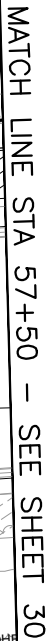


DR: DF	DFS:CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE:06/16	DATE:06/16	DATE:06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			28	153

ST87600074, OCTOBER 2016

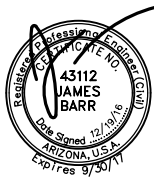
REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

MATCH LINE STA 52+50 - SEE SHEET 28



REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CMD BY DATE

MATCH LINE STA 57+50 - SEE SHEET 29



DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			30	153



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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

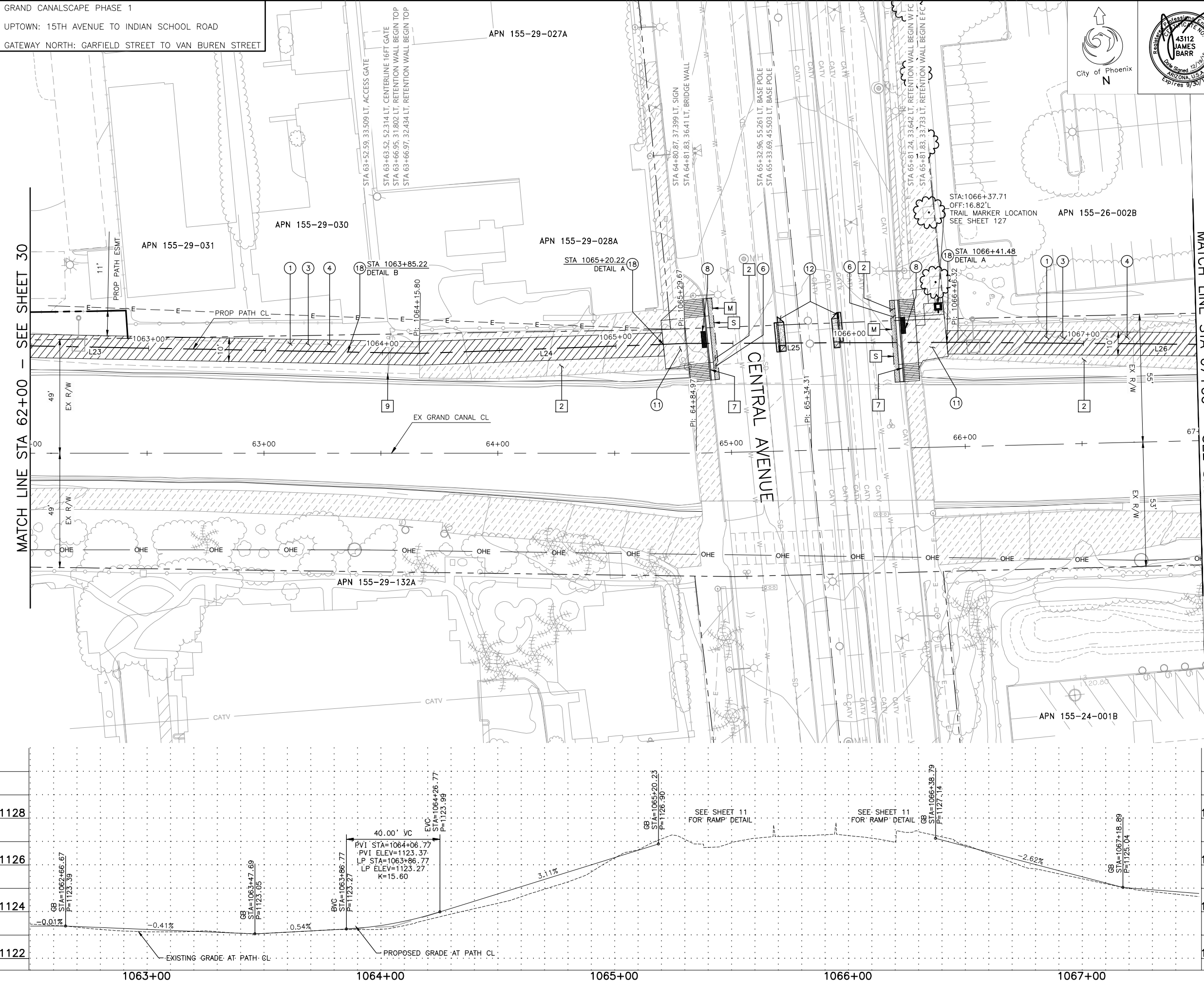
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REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CKD BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	31	153	.

<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists	T.Y.LIN INTERNATIONAL CONSULTING ENGINEER
--	--

DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
----------	---------	---------	-------------

- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE PCC SIDEWALK, STEPS, RAMPS, APRONS AND DRIVEWAYS	SF	691
2	REMOVE ASPHALT CONCRETE	SY	535
7	REMOVE EXISTING CURB & GUTTER	LF	70
9	REMOVE AND REPLACE EXISTING GATE	EA	1

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	3822
③	AGGREGATE BASE COURSE, 4" THICK	TON	92
④	SUBGRADE PREPARATION.	SY	509
⑥	ASPHALT CONCRETE FOR ARTERIAL STREETS (TYPE C-3/4, 7" THICK).	SY	16
⑧	TRUNCATED DOMES PER C.O.P. STD. DET. P1232.	SF	80
⑪	MODIFIED DRIVEWAY - PEDESTRIAN RAMP COMBINATION PER C.O.P. STD. DET. P1244. SEE SHEET 11.	SF	1141
⑫	CONCRETE TRACK GUIDEWAY MODIFICATION. SEE SHEETS 12-13.	SF	107
⑬	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	3

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L23		230.96	S83° 03' 02.24"E	
L24		113.87	S86° 19' 02.68"E	
L25		116.65	S84° 25' 18.52"E	
L26		126.96	S83° 41' 03.43"E	

△ TBM: 60D NAIL  
@ STA: 1052+84.12, 6.29'RT  
TOP ELEV = 1123.24



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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1126	PATHWAY PLAN AND PROFILE				
	CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
	GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074				
1124	DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
	DATE: 06/16	DATE: 06/16	DATE: 06/16		
1122	SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			31	153

MATCH LINE STA 67+00 - SEE SHEET 31



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	32	153	
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB	DATE: 06/16	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">M</div> MATCH EXISTING  <div style="border: 1px solid black; padding: 2px;">P</div> PROTECT IN PLACE  <div style="border: 1px solid black; padding: 2px;">S</div> SAWCUT 2' AND MATCH EXISTING </div>					
<b>REMOVALS</b>					
NO.	DESCRIPTION		UNIT	QTY.	
2	REMOVE ASPHALT CONCRETE		SY	1037	
11	REMOVE EXISTING FENCE		LF	360	
<b>CONSTRUCTION NOTES</b>					
NO.	DESCRIPTION		UNIT	QTY.	
1	CONCRETE S/W PER C.O.P, STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.		SF	8100	
3	AGGREGATE BASE COURSE, 4" THICK		TON	196	
4	SUBGRADE PREPARATION.		SY	1011	
18	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.		EA	1	
20	3" PNEUMATICALLY PLACED MORTAR INCLUDING REINFORCING STEEL.		SY	205	
21	CONCRETE RETAINING WALL (L-SHAPE)		SF	320	
<b>LINE/CURVE DATA</b>					
Number	Radius	Length	Line/Chord Direction	A Value	
L26		126.96	S83° 41' 03.43"E		
L27		156.72	S85° 36' 25.79"E		
<p>△ TBM: 60D NAIL          @ STA: 1083+05.53, 4.91'RT          TOP ELEV = 1124.47</p> <div style="border: 2px solid black; border-radius: 15px; padding: 10px; text-align: center; margin: 10px auto; width: fit-content;"> <p>Call at least two full working days before you begin excavation.</p> <p><b>ARIZONA 811</b></p> <p>Arizona Blue Stake, Inc.</p> <p>Dial 8-1-1 or 1-800-STAKE-IT (782-5348)              In Maricopa County: (602) 263-1100</p> </div>					
<p>CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.</p> <p>"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."</p>					
<b>PATHWAY PLAN AND PROFILE</b>					
<b>CITY OF PHOENIX, ARIZONA</b> <b>STREET TRANSPORTATION DEPARTMENT</b>					
<b>GRAND CANALSCAPE PHASE 1</b> <b>UPTOWN AND GATEWAY NORTH</b> <b>ST87600074</b>					
DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS	
DATE: 06/16	DATE: 06/16	DATE: 06/16	32	153	
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			32	153	

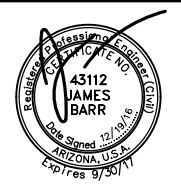
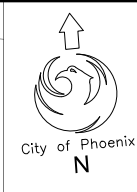
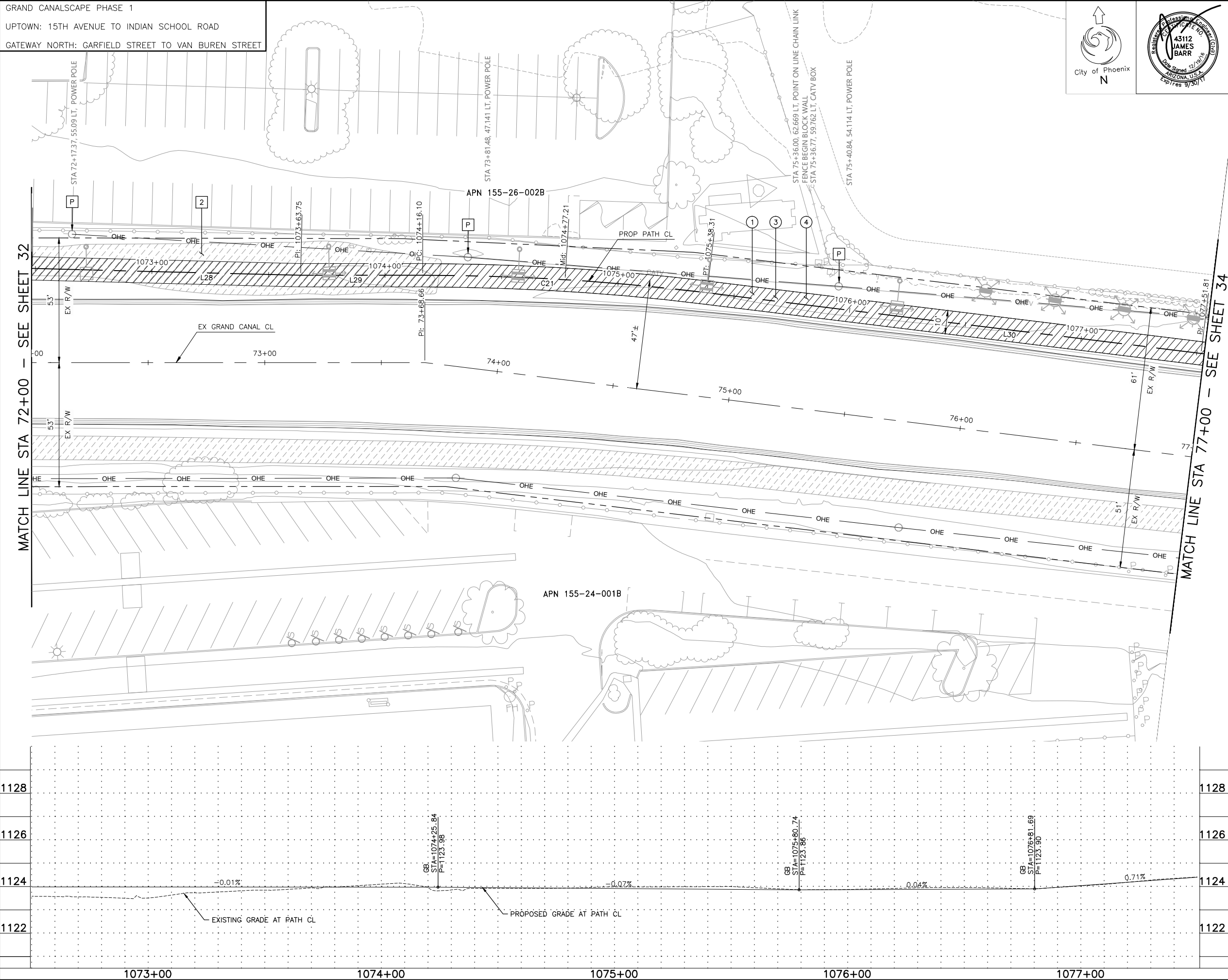
Christopher Milner TY Lin Half Scale.ctb

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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

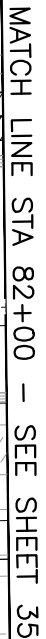
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	33	153	.
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB	DATE: 06/16	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">M</div> MATCH EXISTING </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">P</div> PROTECT IN PLACE </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">S</div> SAWCUT 2' AND MATCH EXISTING </div>					
<b>REMOVALS</b>					
NO.	DESCRIPTION			UNIT	QTY.
2	REMOVE ASPHALT CONCRETE			SY	364
<b>CONSTRUCTION NOTES</b>					
NO.	DESCRIPTION			UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.			SF	5049
③	AGGREGATE BASE COURSE, 4" THICK			TON	122
④	SUBGRADE PREPARATION.			SY	673
<b>LINE/CURVE DATA</b>					
Number	Radius	Length	Line/Chord	Direction	A Value
L28		115.03	S84° 08'	15.46"E	
L29		52.35	S85° 36'	25.79"E	
C21	1000.00	122.21	S82° 06'	21.76"E	
L30		213.49	S78° 36'	17.74"E	
<p>△ TBM: 60D NAIL          ◎ STA: 1083+05.53, 4.91'RT          TOP ELEV = 1124.47</p> <div style="border: 2px solid black; border-radius: 15px; padding: 10px; text-align: center; margin: 10px auto; width: fit-content;"> <p>Call at least two full working days before you begin excavation.</p> <p><b>ARIZONA 811</b></p> <p>Arizona Blue Stake, Inc.</p> <p>Dial 8-1-1 or 1-800-STAKE-IT (782-5348)              In Maricopa County: (602) 263-1100</p> </div>					
<p>CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.</p> <p>"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."</p>					
<b>PATHWAY PLAN AND PROFILE</b>					
<b>CITY OF PHOENIX, ARIZONA</b> STREET TRANSPORTATION DEPARTMENT					
<b>GRAND CANALSCAPE PHASE 1</b> <b>UPTOWN AND GATEWAY NORTH</b> <b>ST87600074</b>					
DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS	
DATE: 06/16	DATE: 06/16	DATE: 06/16	NO:		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			33	153	

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

MATCH LINE STA 77+00 - SEE SHEET 33



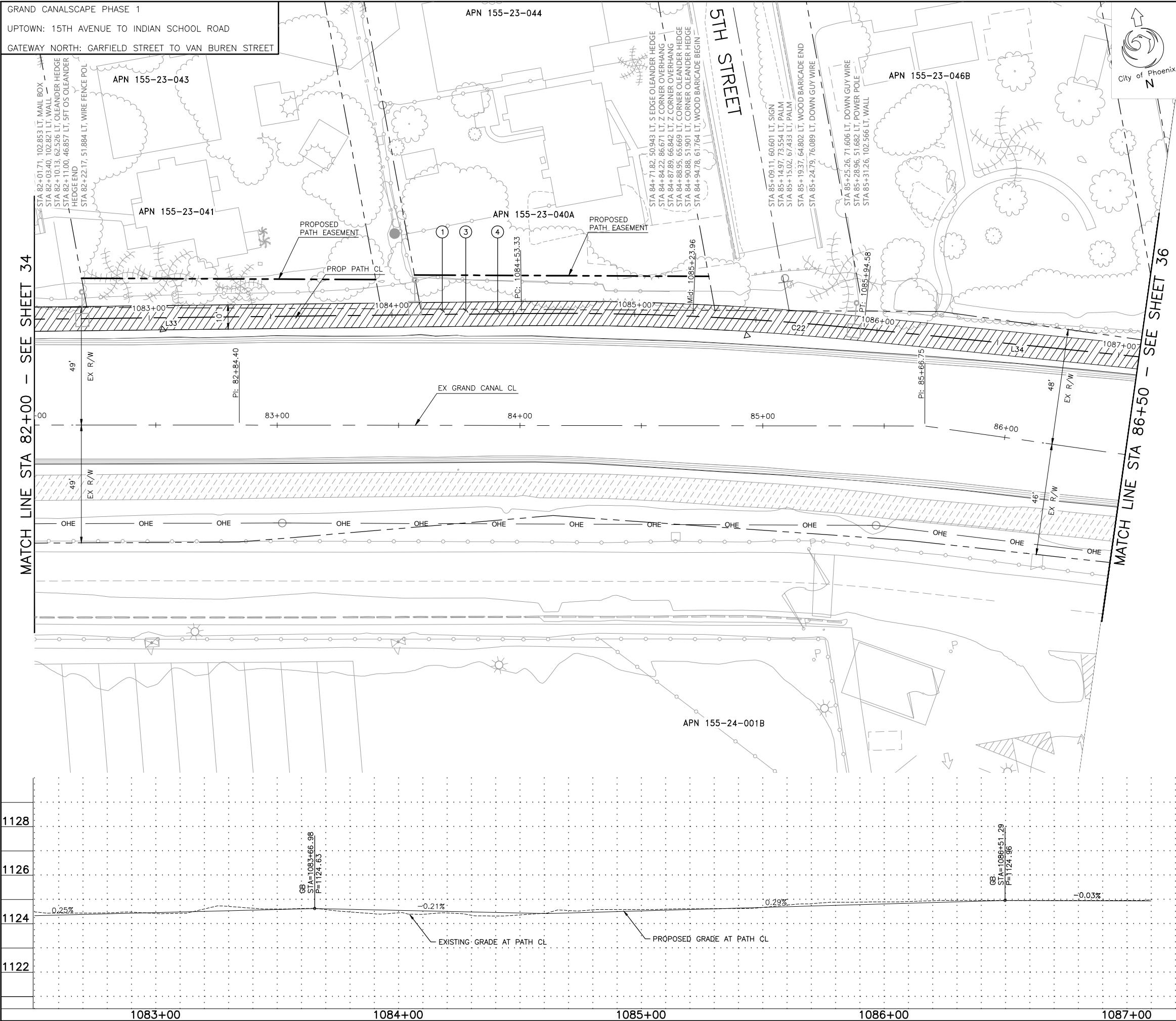
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT																				
9	ARIZ.	ST87600074	34	153	.																				
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER																						
DES: CEM		DR: CEM	CK: JAB		DATE: 06/16																				
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">M</div> MATCH EXISTING </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">P</div> PROTECT IN PLACE </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">S</div> SAWCUT 2' AND MATCH EXISTING </div>																									
<b>REMOVALS</b>																									
NO.	DESCRIPTION			UNIT	QTY.																				
<b>CONSTRUCTION NOTES</b>																									
NO.	DESCRIPTION			UNIT	QTY.																				
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.			SF	4995																				
③	AGGREGATE BASE COURSE, 4" THICK			TON	121																				
④	SUBGRADE PREPARATION.			SY	666																				
<div style="border: 1px solid black; padding: 10px;"> <p style="text-align: center; margin: 0;"><b>LINE/CURVE DATA</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Number</th><th>Radius</th><th>Length</th><th>Line/Chord Direction</th><th>A Value</th></tr> </thead> <tbody> <tr> <td>L31</td><td></td><td>172.00</td><td>S78° 10' 53.33"E</td><td></td></tr> <tr> <td>L32</td><td></td><td>151.69</td><td>S78° 38' 57.19"E</td><td></td></tr> <tr> <td>L33</td><td></td><td>377.83</td><td>S79° 59' 56.24"E</td><td></td></tr> </tbody> </table> </div>						Number	Radius	Length	Line/Chord Direction	A Value	L31		172.00	S78° 10' 53.33"E		L32		151.69	S78° 38' 57.19"E		L33		377.83	S79° 59' 56.24"E	
Number	Radius	Length	Line/Chord Direction	A Value																					
L31		172.00	S78° 10' 53.33"E																						
L32		151.69	S78° 38' 57.19"E																						
L33		377.83	S79° 59' 56.24"E																						
<p>△ TBM: 60D NAIL</p> <p>© STA: 1083+05.53, 4.91'RT</p> <p>TOP ELEV = 1124.47</p>																									
<div style="border: 2px solid black; border-radius: 15px; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center; font-size: small;">Call at least two full working days before you begin excavation.</p> <div style="text-align: center;"> <p style="margin: 0;"><b>ARIZONA 811</b></p> <p style="margin: 0; font-size: x-small;">Arizona Blue Stake, Inc.</p> </div> <p style="text-align: center; font-size: x-small;">Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County: (602) 263-1100</p> </div>																									
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DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS																					
DATE: 06/16	DATE: 06/16	DATE: 06/16																							
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			34	153																					

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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

[illegible]

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CKD BY DATE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	35	153	.

**T.Y. LIN INTERNATIONAL** engineers | planners | scientists T.Y.LIN INTERNATIONAL  
CONSULTING ENGINEER

DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
----------	---------	---------	-------------

- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

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CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4557
③	AGGREGATE BASE COURSE, 4" THICK	TON	110
④	SUBGRADE PREPARATION.	SY	608

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L33		377.83	S79° 59' 56.24"E	
C22	1250.00	141.25	S76° 45' 41.94"E	
L34		160.35	S73° 31' 27.63"E	

△ TBM: 60D NAIL  
@ STA: 1083+05.53, 4.91'RT  
TOP ELEV = 1124.47

△ TBM: 60D NAIL  
@ STA: 1085+46.69, 6.69'RT  
TOP ELEV = 1124.88



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND  
VERIFYING ELEVATIONS FOR ALL UNDERGROUND  
UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			35	153

T:\Tempe\Projects\221863.00\600\_CADD\Delv Files\Pathway\ST87600074PP.dwg

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CKD BY DATE

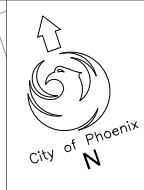
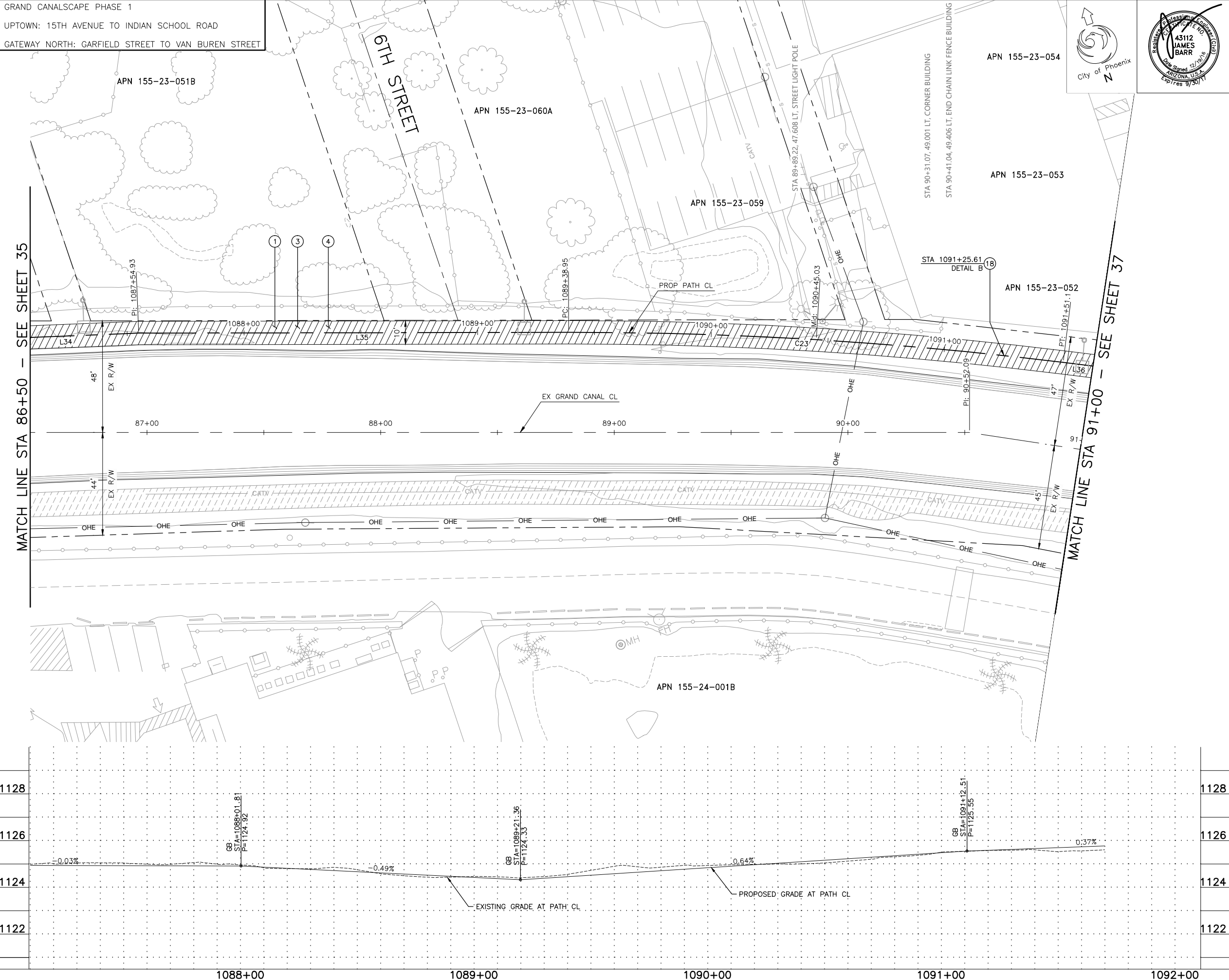
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REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CHK BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	36	153	.
<b>TY. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB		DATE: 06/16

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT 2' AND MATCH EXISTING

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230. PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4556
③	AGGREGATE BASE COURSE, 4" THICK	TON	110
④	SUBGRADE PREPARATION.	SY	607
⑱	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	1

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L34		160.35	S73° 31' 27.63"E	
L35		184.01	S71° 18' 21.67"E	
C23	1700.00	212.17	S67° 43' 50.30"E	
L36		41.15	S64° 09' 18.92"E	

△ TBM: 60D NAIL  
@ STA: 1085+46.69, 6.69'RT  
TOP ELEV = 1124.88



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

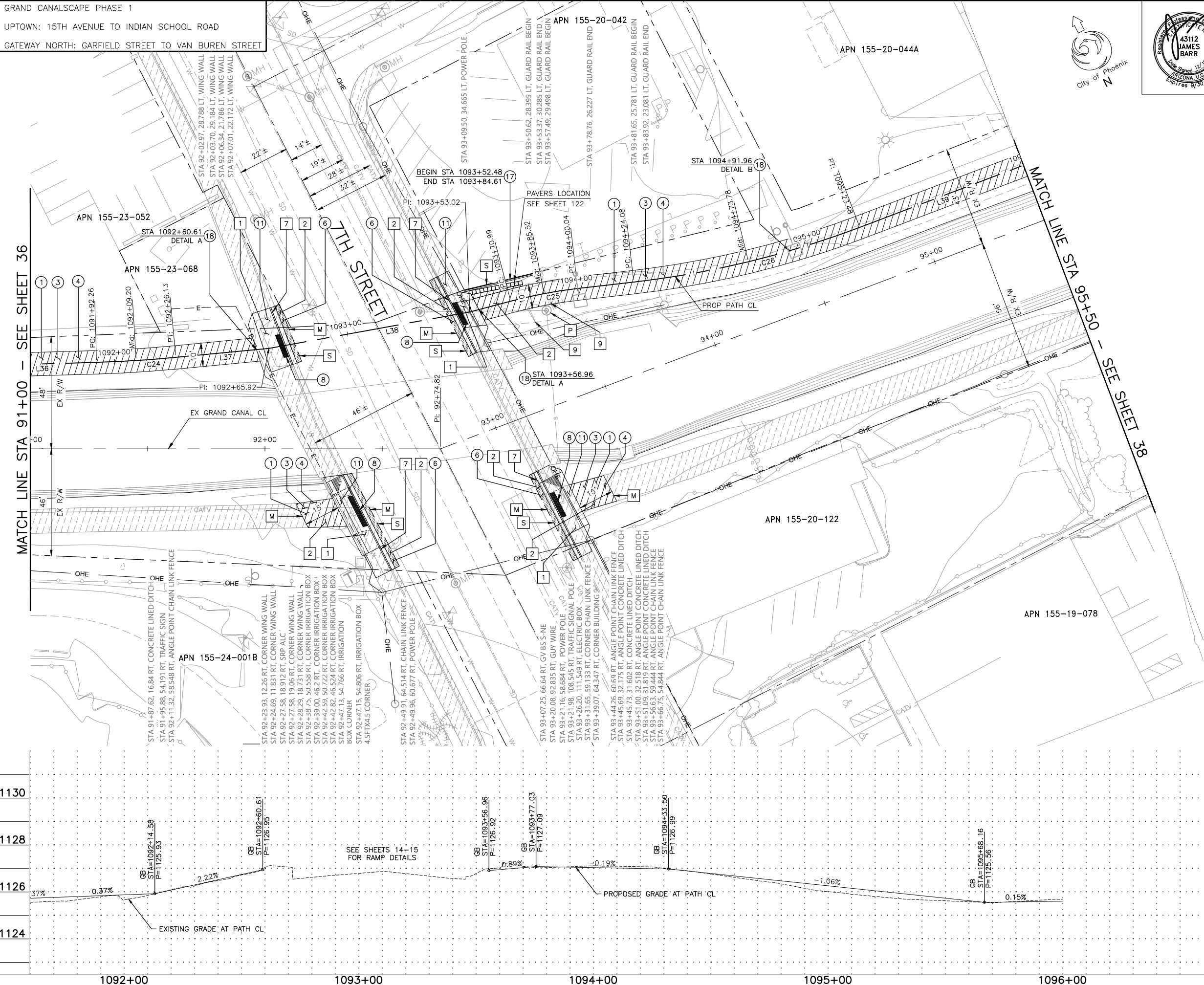
PATHWAY PLAN AND PROFILE				
CITY OF PHOENIX, ARIZONA				
STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1				
UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			36	153



NO.	DESCRIPTION	REV BY	CHK BY	DATE

NO.	DESCRIPTION	REV BY	CHK BY	DATE

NO.	DESCRIPTION	REV BY	CHK BY	DATE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	37	153	-
TY. LIN INTERNATIONAL engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB	DATE: 06/16	
<div><div>M</div><div>P</div><div>S</div></div> <div>MATCH EXISTING PROTECT IN PLACE SAWCUT 2' AND MATCH EXISTING</div>					

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE PCC SIDEWALK, STEPS, RAMPS, APRONS AND DRIVEWAYS	SF	963
2	REMOVE ASPHALT CONCRETE	SY	98
7	REMOVE EXISTING CURB & GUTTER	LF	149
9	REMOVE AND REPLACE EXISTING GATE	EA	1

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE SW PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4753
3	AGGREGATE BASE COURSE, 4" THICK	TON	115
4	SUBGRADE PREPARATION.	SY	632
6	ASPHALT CONCRETE FOR ARTERIAL STREETS (TYPE C-3/4, 7" THICK).	SY	33
8	TRUNCATED DOMES PER C.O.P. STD. DET. P1232.	SF	92
11	MODIFIED DRIVEWAY - PEDESTRIAN RAMP COMBINATION PER C.O.P. STD. DET. P1244. SEE SHEETS 14-15.	SF	1507
17	CONCRETE SINGLE CURB, MAG STD. DET. 222, TYPE 'B'	LF	32
18	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	3

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L36		41.15	S64° 09' 18.92"E	
C24	500.00	33.87	S66° 05' 44.69"E	
L37		39.79	S68° 02' 10.46"E	
L38		87.10	S72° 47' 37.29"E	
C25	200.00	29.05	S73° 11' 29.49"E	
C26	400.00	99.40	S76° 08' 58.92"E	
L39		102.01	S83° 16' 06.02"E	

△ TBM: 60D NAIL  
⊙ STA: 1096+64.52, 6.89'RT  
TOP ELEV = 1125.63



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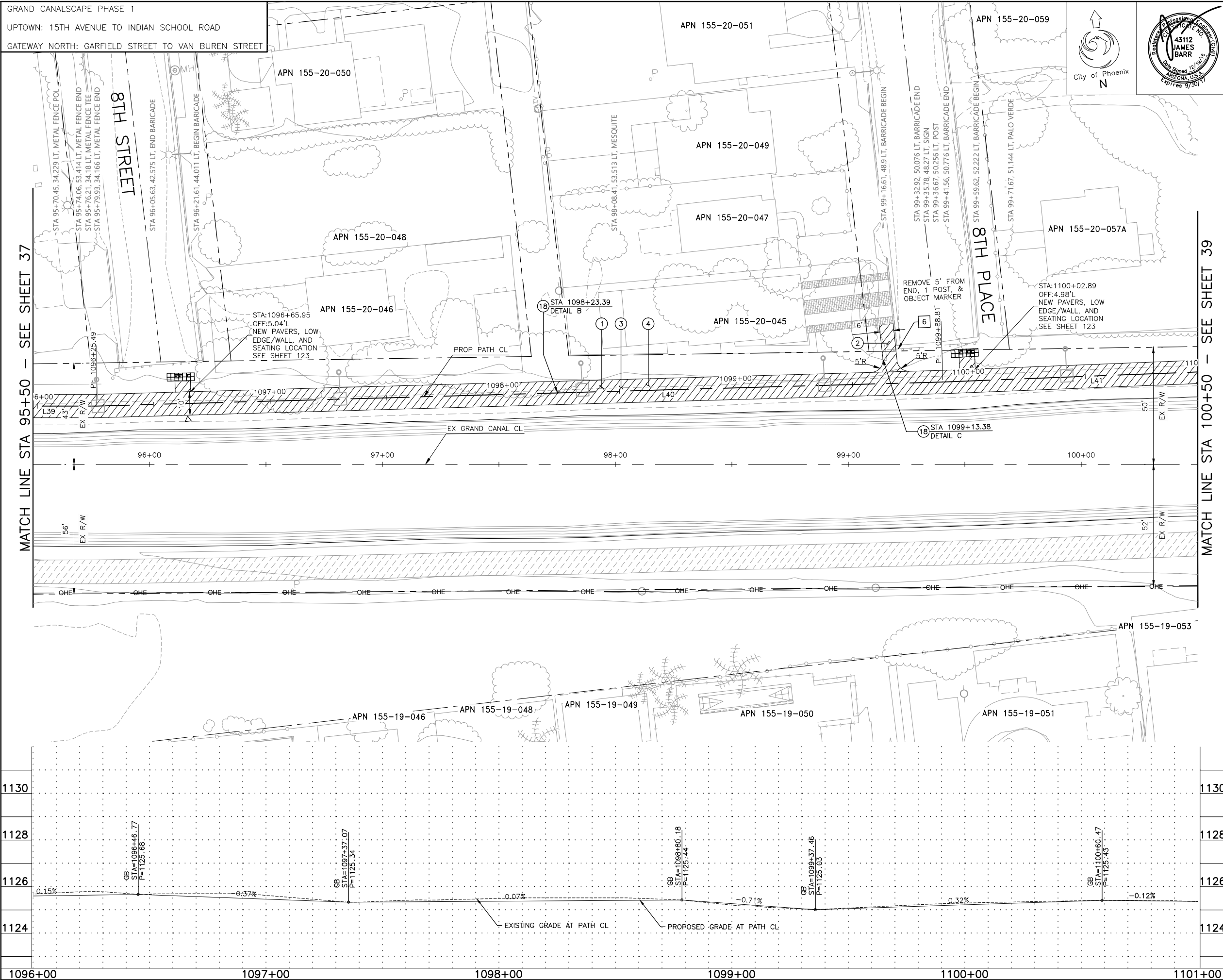
PATHWAY PLAN AND PROFILE			
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT			
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074			
DR: DF	DES: CEM	CK: JAB	SHEET NO: 37
DATE: 06/16	DATE: 06/16	DATE: 06/16	TOTAL SHEETS: 153
SCALE: 1" = 20' HORIZONTAL		1" = 2' VERTICAL	



REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	38	153	.

**T.Y. LIN INTERNATIONAL** engineers | planners | scientists **T.Y.LIN INTERNATIONAL**  
CONSULTING ENGINEER

DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
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- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.
6	REMOVE EXISTING BARRICADE	LF	5

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4006
②	CONCRETE S/W PER C.O.P. STD. DET. P1230, 4" THICK, WIDTH PER PLAN.	SF	134
③	AGGREGATE BASE COURSE, 4" THICK	TON	97
④	SUBGRADE PREPARATION.	SY	552
⑱	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	2

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L39		102.01	S83° 16' 06.02"E	
L40		363.32	S84° 53' 38.70"E	
L41		215.28	S85° 32' 12.62"E	

△ TBM: 60D NAIL  
@ STA: 1096+64.52, 6.89'RT  
TOP ELEV = 1125.63



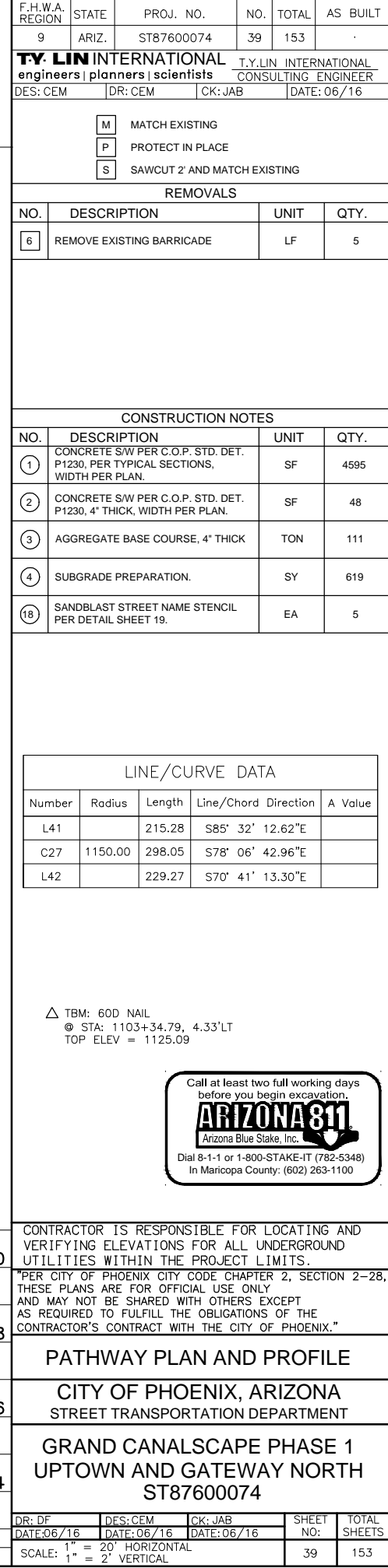
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PATHWAY PLAN AND PROFILE				
CITY OF PHOENIX, ARIZONA				
STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1				
UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DF	DFS: CEM	CK: JAB	SHEET	TOTAL
DATE: 06/16	DATE: 06/16	DATE: 06/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			38	153

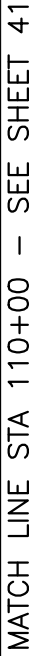
REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

MATCH LINE STA 100+50 - SEE SHEET 38



REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

1130
1128
1126
1124



PATHWAY PLAN AND PROFILE				
CITY OF PHOENIX, ARIZONA				
STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1				
UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DF	DFS: CEM	CK: JAB	SHEET	TOTAL
DATE: 06/16	DATE: 06/16	DATE: 06/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			40	153

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

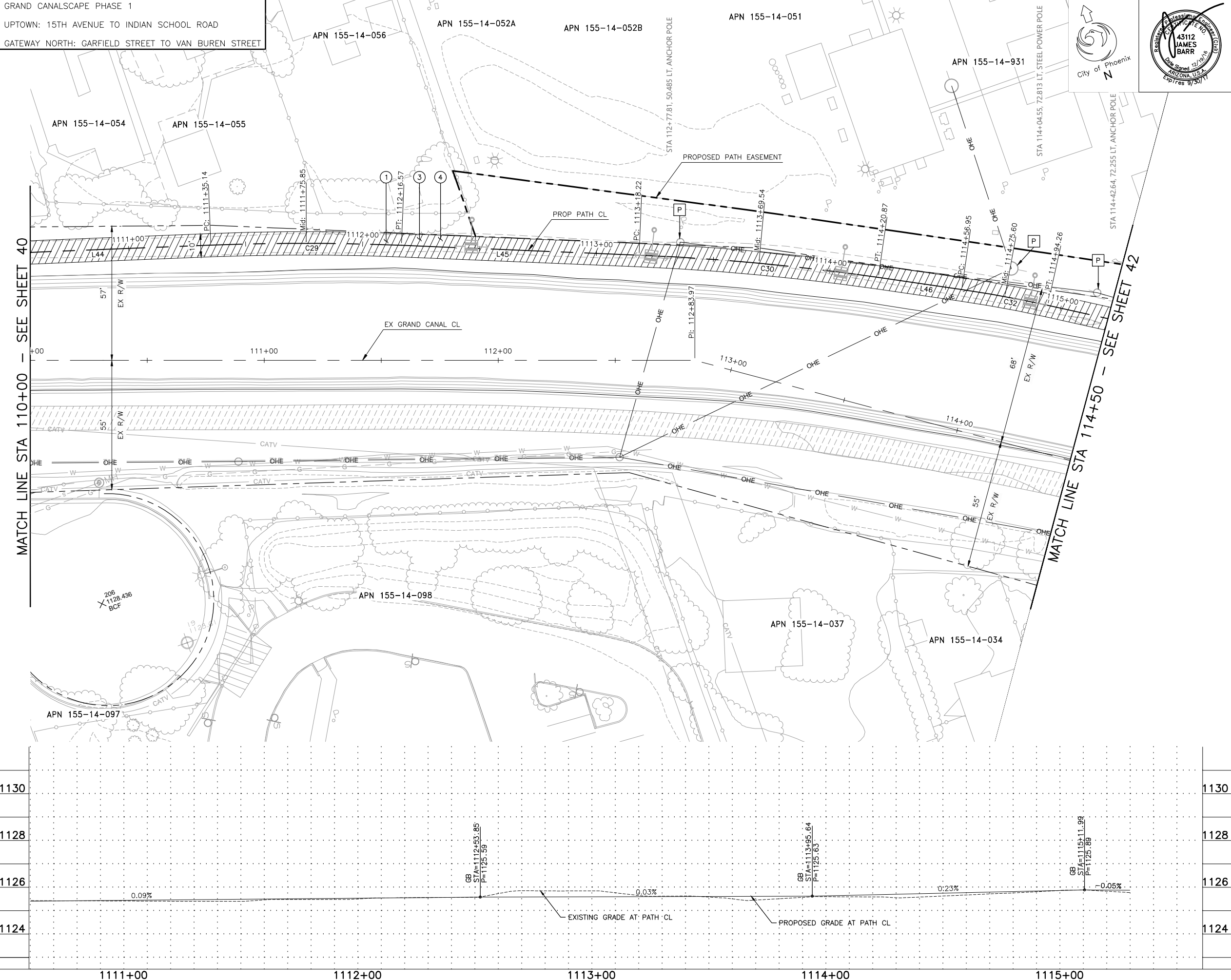
REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CMD BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	41	153	.
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB		DATE: 06/16

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT 2' AND MATCH EXISTING

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4628
③	AGGREGATE BASE COURSE, 4" THICK	TON	112
④	SUBGRADE PREPARATION.	SY	617

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L44		81.47	S72° 58' 39.50"E	
C29	1000.00	81.42	S70° 38' 42.22"E	
L45		101.65	S68° 18' 44.94"E	
C30	1000.00	102.65	S65° 22' 17.94"E	
L46		36.08	S62° 25' 50.94"E	
C32	500.00	37.31	S60° 17' 35.32"E	

△ TBM: 60D NAIL  
 @ STA: 1106+76.01, 1.82' LT  
 TOP ELEV = 1125.10



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## PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
JPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DFS: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	41	153
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL				

Christopher Milner  
TY Lin Half Scale.ctb

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

APN 155-14-047

APN 155-14-046



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	42	153	.
<b>T.Y. LIN INTERNATIONAL</b> <b>engineers   planners   scientists</b>			<b>T.Y. LIN INTERNATIONAL</b> <b>CONSULTING ENGINEER</b>		
DES: CEM		DR: CEM	CK: JAB		DATE: 06/16

- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5031
③	AGGREGATE BASE COURSE, 4" THICK	TON	122
④	SUBGRADE PREPARATION.	SY	671
⑱	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	1

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L47		91.44	S58° 09' 19.70"E	
C33	200.00	40.21	S63° 54' 55.48"E	
C34	200.00	48.60	S62° 42' 50.12"E	
L48		9.31	S55° 45' 08.97"E	
C35	200.00	62.42	S46° 48' 41.85"E	
C36	200.00	57.81	S46° 09' 06.13"E	
L49		272.40	S54° 25' 57.52"E	

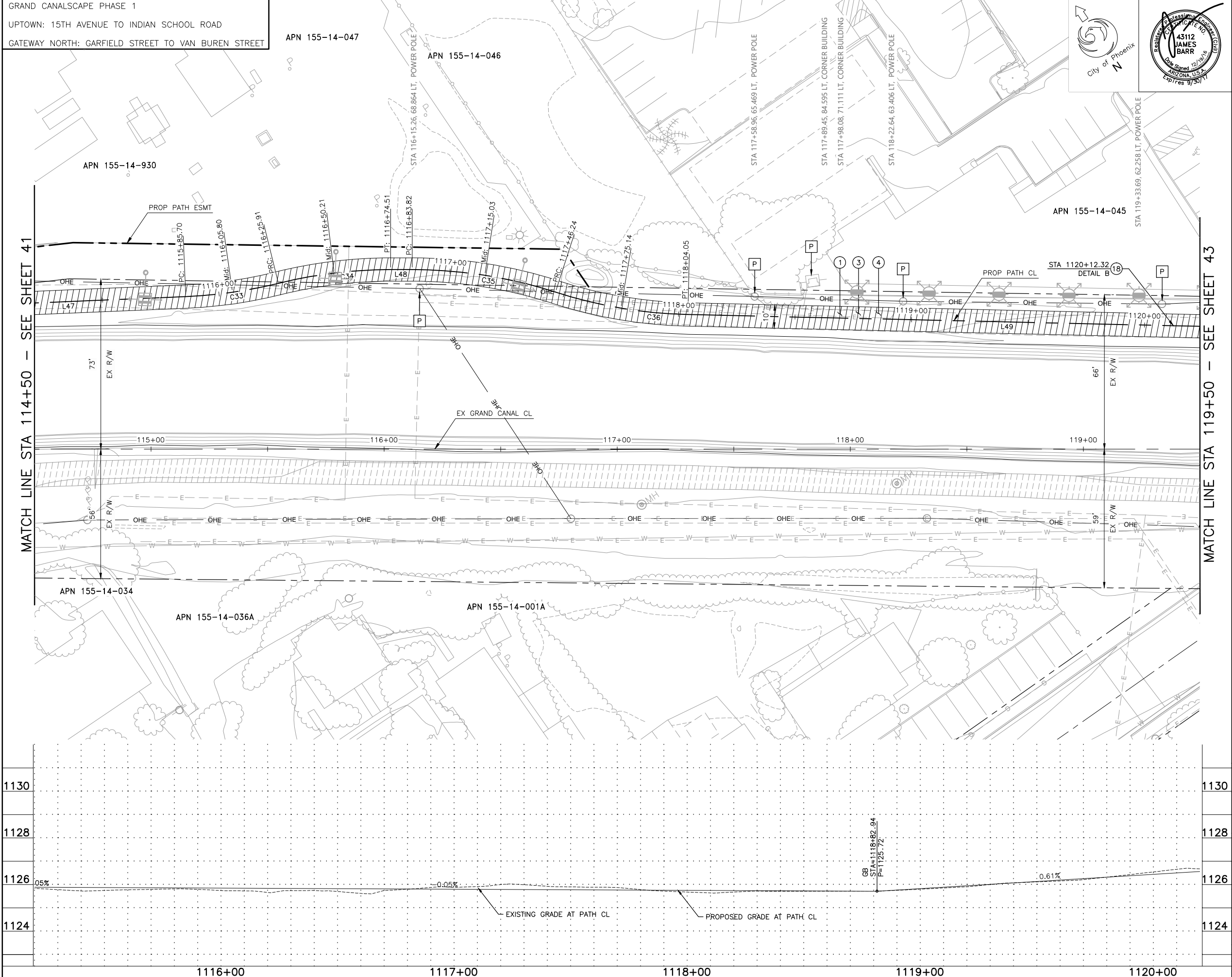
△ TBM: 60D NAIL  
 @ STA: 1106+76.01, 1.82'LT  
 TOP ELEV = 1125.10



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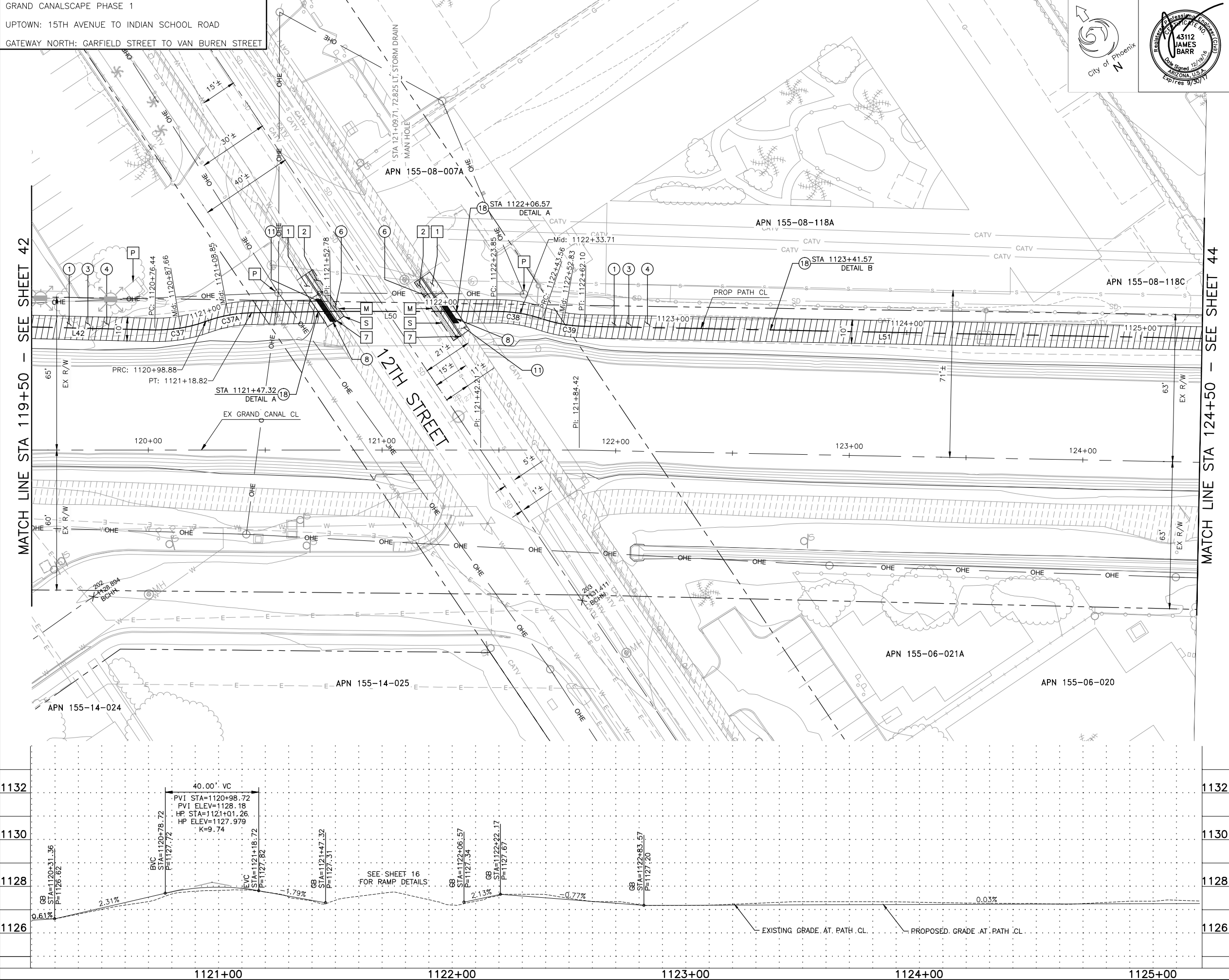
PATHWAY PLAN AND PROFILE				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074				
DR: DF	DFS: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			42	153



ST87600074, OCTOBER 2016





REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION





F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	43	153	

**TY. LIN INTERNATIONAL**  
engineers | planners | scientists  
CONSULTING ENGINEER

DES: CEM    DR: CEM    CK: JAB    DATE: 06/16

M

MATCH EXISTING

P

PROTECT IN PLACE

S

SAWCUT 2' AND MATCH EXISTING

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.
1	REMOVE PCC SIDEWALK, STEPS, RAMPS, APRONS AND DRIVEWAYS	SF	329
2	REMOVE ASPHALT CONCRETE	SY	12
7	REMOVE EXISTING CURB & GUTTER	LF	54

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4434
3	AGGREGATE BASE COURSE, 4" THICK	TON	107
4	SUBGRADE PREPARATION.	SY	591
6	ASPHALT CONCRETE FOR ARTERIAL STREETS (TYPE C-3/4, 7" THICK).	SY	12
8	TRUNCATED DOMES PER C.O.P. STD. DET. P1232.	SF	47
11	MODIFIED DRIVEWAY - PEDESTRIAN RAMP COMBINATION PER C.O.P. STD. DET. P1244. SEE SHEET 16.	SF	329
18	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	3

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L49		272.40	S54° 25' 57.52"E	
C37	60.00	22.44	S65° 08' 42.94"E	
C37A	60.00	19.94	S66° 20' 08.69"E	
L50		71.08	S55° 45' 08.97"E	
C38	60.00	19.71	S46° 20' 27.64"E	
C39	60.00	18.54	S45° 46' 46.07"E	
L51		783.61	S54° 37' 45.82"E	

△ TBM: 60D NAIL  
  @ STA: 1106+76.01, 1.82'LT  
  TOP ELEV = 1125.10

△ TBM: 60D NAIL  
  @ STA: 1138+74.65, 5.43'LT  
  TOP ELEV = 1127.10

Call at least two full working days before you begin excavation.

**ARIZONA811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

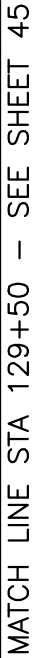
GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	43	153

SCALE: 1" = 20' HORIZONTAL  
1" = 2' VERTICAL

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

MATCH LINE STA 124+50 - SEE SHEET 43



M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT 2' AND MATCH EXISTING

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4287
③	AGGREGATE BASE COURSE, 4" THICK	TON	104
④	SUBGRADE PREPARATION.	SY	572
⑥	ASPHALT CONCRETE FOR ARTERIAL STREETS (TYPE C-3/4, 7" THICK).	SY	12
⑧	TRUNCATED DOMES PER C.O.P. STD. DET. P1232.	SF	56
⑪	MODIFIED DRIVEWAY - PEDESTRIAN RAMP COMBINATION PER C.O.P. STD. DET. P1244. SEE SHEET 17.	SF	1125
⑮	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	3

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L51		783.61	S54° 37' 45.82"E	

△ TBM: 60D NAIL  
 @ STA: 1138+74.65, 5.43'LT  
 TOP ELEV = 1127.10



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.
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PATHWAY PLAN AND PROFILE				
CITY OF PHOENIX, ARIZONA				
STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1				
UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			44	153

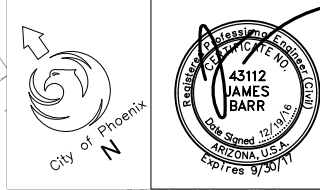
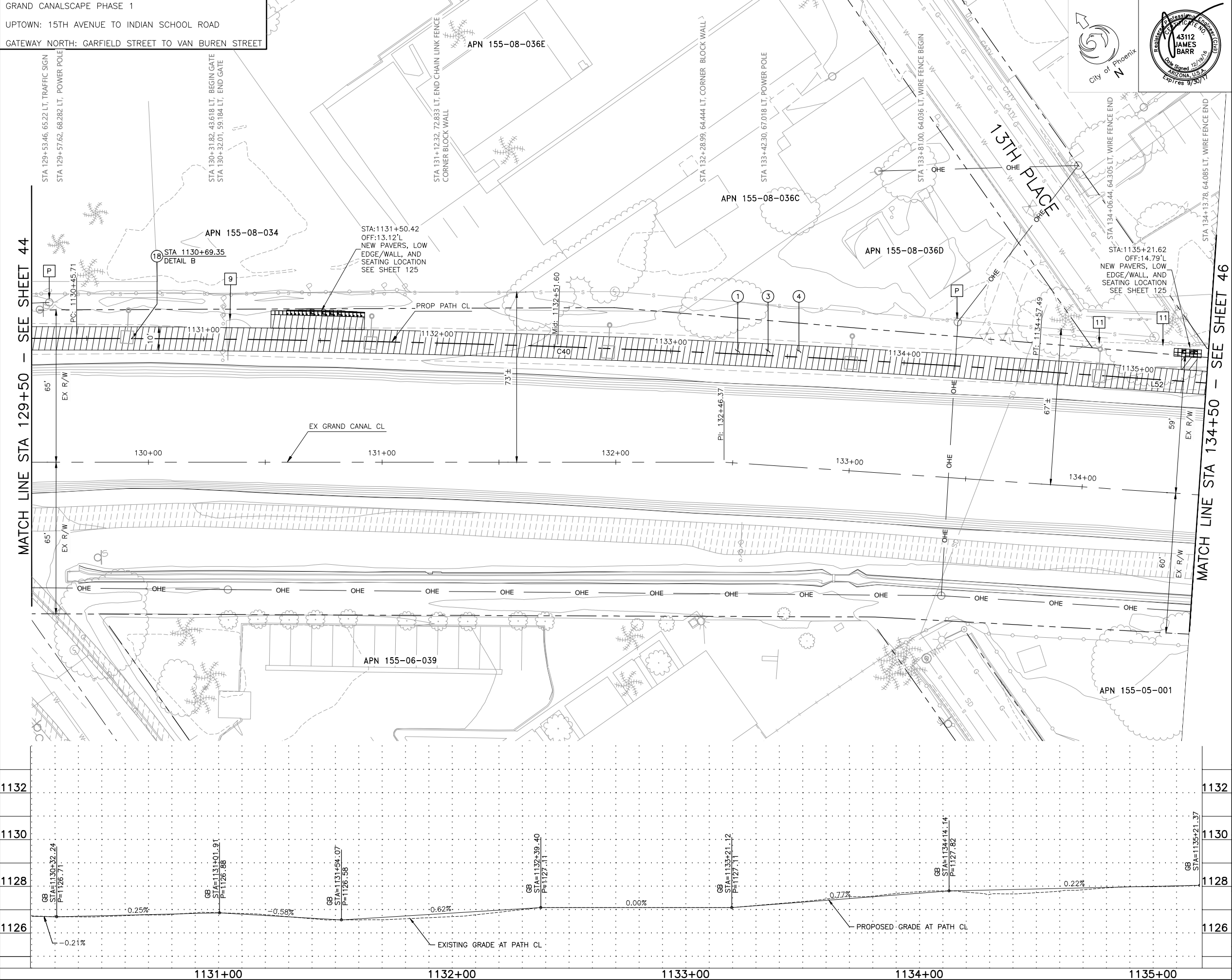


[illegible]

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	45	153	

**TY. LIN INTERNATIONAL**  
engineers | planners | scientists

**T.Y. LIN INTERNATIONAL**  
CONSULTING ENGINEER

DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
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<input type="checkbox"/> M	MATCH EXISTING
<input type="checkbox"/> P	PROTECT IN PLACE
<input type="checkbox"/> S	SAWCUT 2' AND MATCH EXISTING

**REMOVALS**

NO.	DESCRIPTION	UNIT	QTY.
9	REMOVE AND REPLACE EXISTING GATE	EA	1
11	REMOVE EXISTING FENCE	LF	54

**CONSTRUCTION NOTES**

NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5033
③	AGGREGATE BASE COURSE, 4" THICK	TON	122
④	SUBGRADE PREPARATION.	SY	671
⑱	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	1

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
C40	6000.00	411.78	S52° 39' 47.85"E	
L52		80.19	S50° 41' 49.89"E	

△ TBM: 60D NAIL  
⊙ STA: 1138+74.65, 5.43'LT  
TOP ELEV = 1127.10

Call at least two full working days before you begin excavation.

ARIZONA811

Arizona Blue Stake, Inc.

↓

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA

STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1

UPTOWN AND GATEWAY NORTH

ST87600074

DR: DF	DFS: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	45	153

SCALE: 1" = 20' HORIZONTAL  
1" = 2' VERTICAL

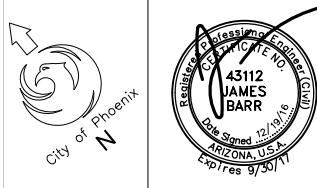
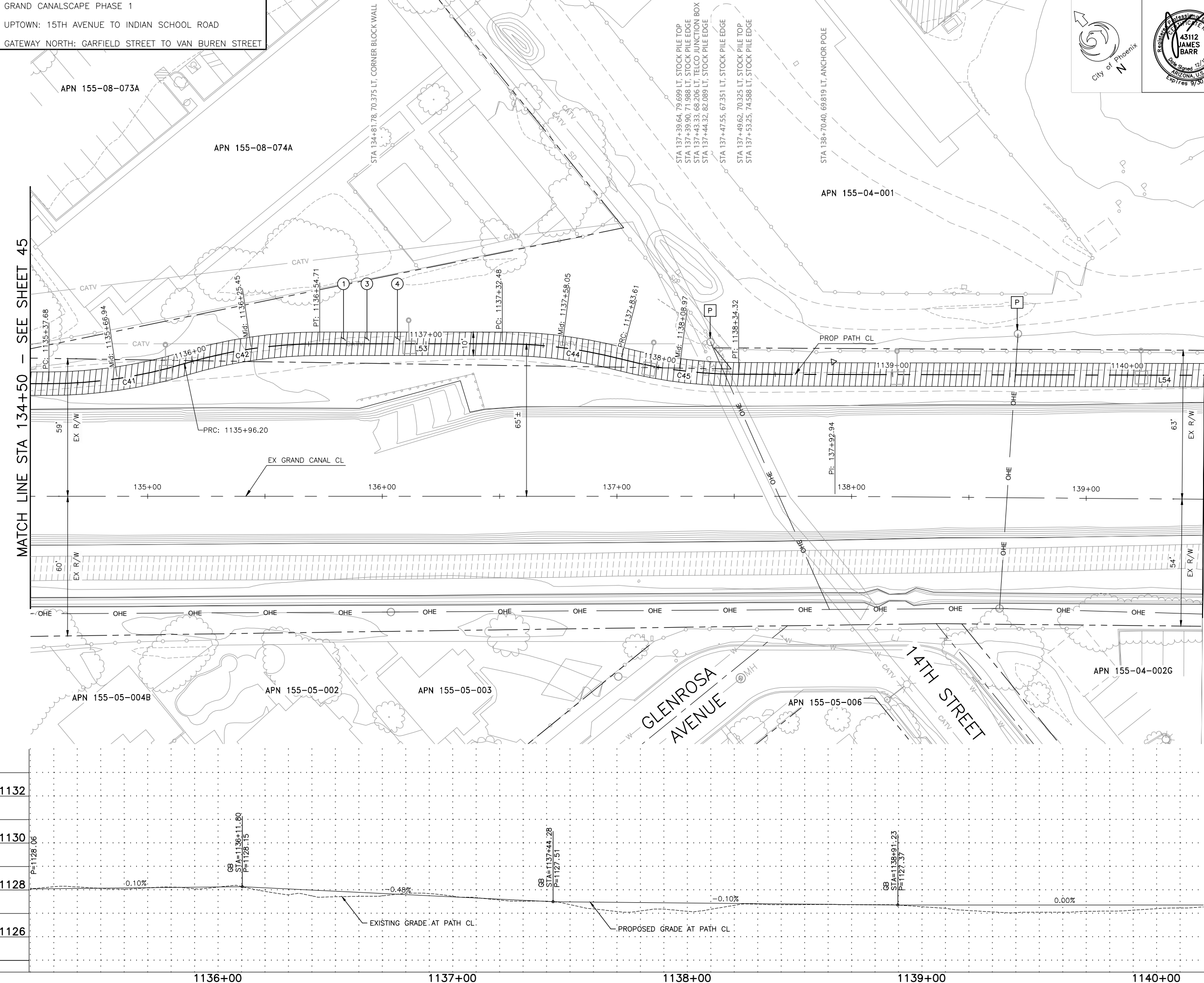
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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CMD BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	46	153	.

**T.Y. LIN INTERNATIONAL** engineers | planners | scientists T.Y. LIN INTERNATIONAL  
CONSULTING ENGINEER

DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
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- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

<b>CONSTRUCTION NOTES</b>			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5032
③	AGGREGATE BASE COURSE, 4" THICK	TON	122
④	SUBGRADE PREPARATION.	SY	671

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
C41	200.00	58.52	S59° 04' 45.41"E	
C42	200.00	58.52	S59° 04' 45.41"E	
L53		77.77	S50° 41' 49.89"E	
C44	200.00	51.13	S43° 22' 23.98"E	
L54		381.07	S50° 34' 29.20"E	

△ TBM: 60D NAIL  
 @ STA: 1138+74.65, 5.43'LT  
 TOP ELEV = 1127.10



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

\*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

<h1 style="text-align: center;">PATHWAY PLAN AND PROFILE</h1>				
<h2 style="text-align: center;">CITY OF PHOENIX, ARIZONA</h2> <h3 style="text-align: center;">STREET TRANSPORTATION DEPARTMENT</h3>				
<h1 style="text-align: center;">GRAND CANALSCAPE PHASE 1</h1> <h2 style="text-align: center;">UPTOWN AND GATEWAY NORTH</h2> <h3 style="text-align: center;">ST87600074</h3>				
DR: DF	DFS: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			46	153

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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

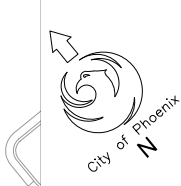
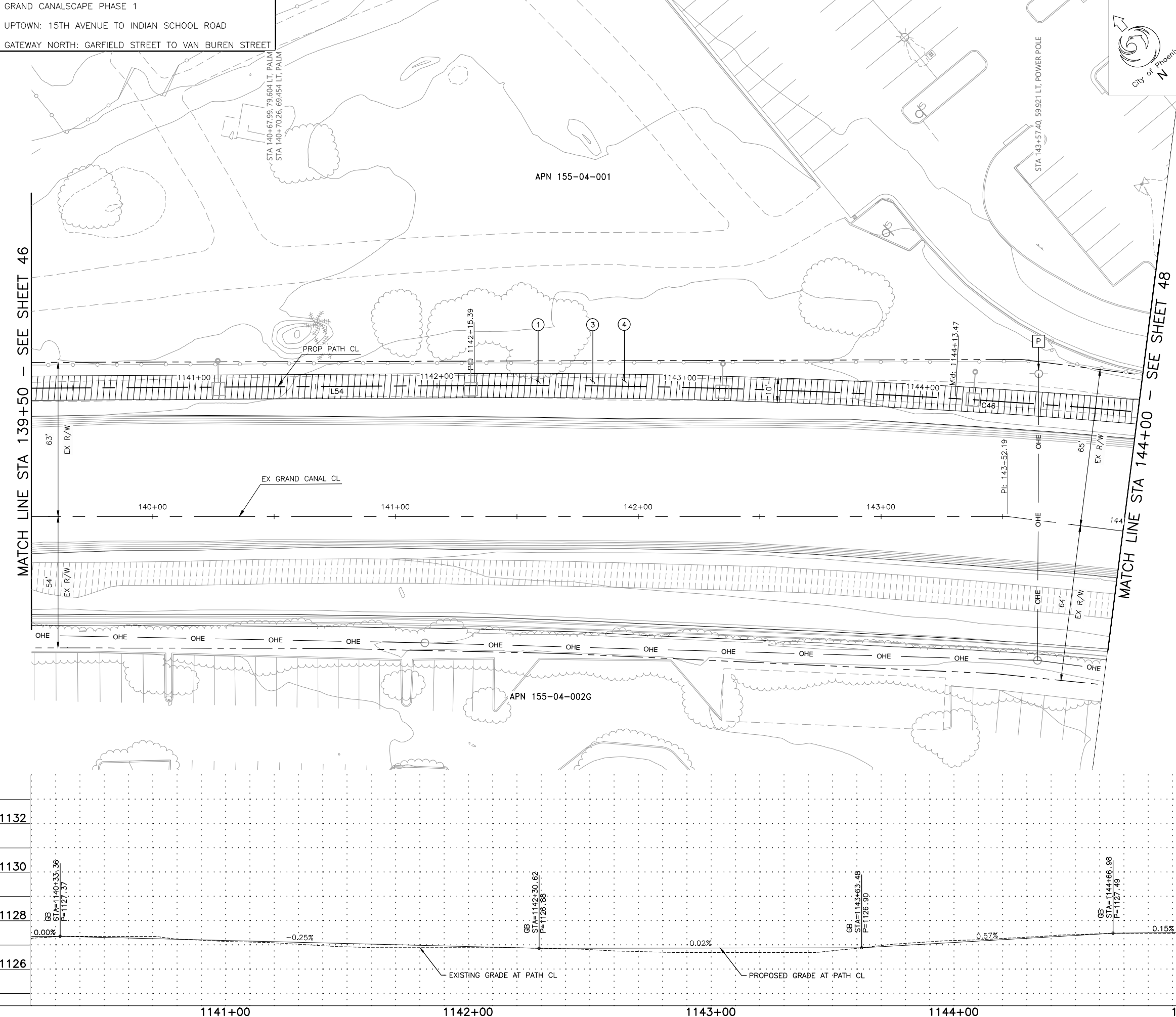
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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	47	153	.
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB		DATE: 06 / 16

M	MATCH EXISTING
P	PROTECT IN PLACE
S	SAWCUT 2' AND MATCH EXISTING

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4562
③	AGGREGATE BASE COURSE, 4" THICK	TON	110
④	SUBGRADE PREPARATION.	SY	608

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L54		381.07	S50° 34' 29.20"E	
C46	3000.00	396.17	S46° 47' 29.84"E	

△ TBM: 60D NAIL  
 @ STA: 1138+74.65, 5.43'LT  
 TOP ELEV = 1127.10



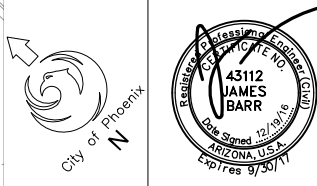
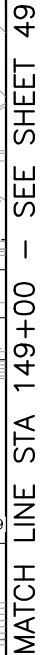
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<h1 style="text-align: center;">PATHWAY PLAN AND PROFILE</h1>				
<h2 style="text-align: center;">CITY OF PHOENIX, ARIZONA</h2> <h3 style="text-align: center;">STREET TRANSPORTATION DEPARTMENT</h3>				
<h1 style="text-align: center;">GRAND CANALSCAPE PHASE 1</h1> <h2 style="text-align: center;">UPTOWN AND GATEWAY NORTH</h2> <h3 style="text-align: center;">ST87600074</h3>				
DR: DF	DFS: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	47	153
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			47	153

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CMD BY DATE

MATCH LINE STA 144+00 - SEE SHEET 47



DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
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- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230. PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5000
③	AGGREGATE BASE COURSE, 4" THICK	TON	121
④	SUBGRADE PREPARATION.	SY	667

△ TBM: 60D NAIL  
@ STA: 1138+74.65, 5.43'LT  
TOP ELEV = 1127.10



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## PATHWAY PLAN AND PROFILE

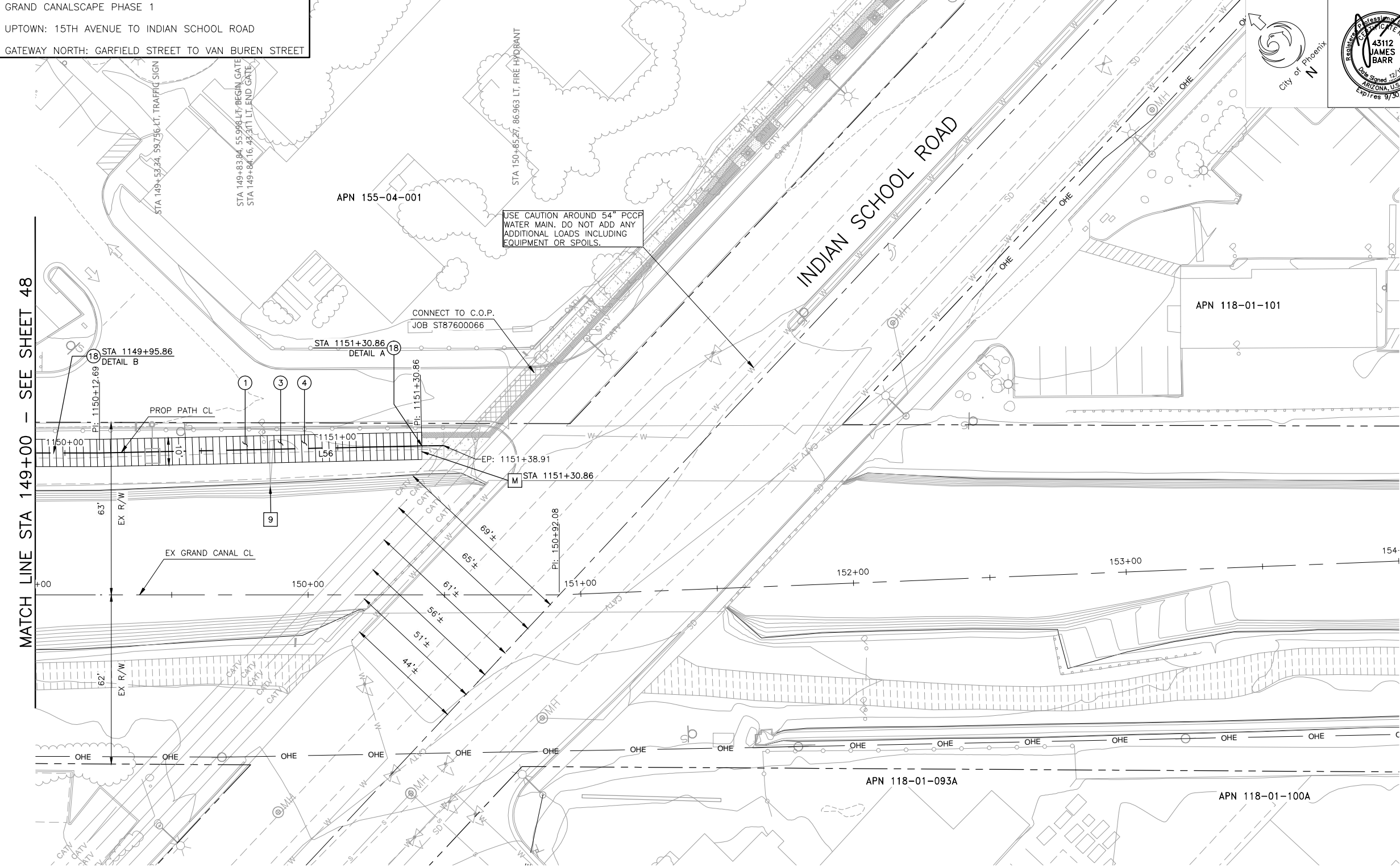
CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			48	153

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

MATCH LINE STA 149+00 - SEE SHEET 48



△ TBM: 60D NAIL  
 ⊙ STA: 1138+74.65, 5.43' LT  
 TOP ELEV = 1127.10

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**

Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
 In Maricopa County: (602) 263-1100

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 UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28,  
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 AND MAY NOT BE SHARED WITH OTHERS EXCEPT  
 AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE  
 CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## PATHWAY PLAN AND PROFILE

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### CITY OF PHOENIX, ARIZONA

#### STREET TRANSPORTATION DEPARTMENT

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## GRAND CANALSCAPE PHASE 1

## UPTOWN AND GATEWAY NORTH

# ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET	TOTAL
DATE: 06/16	DATE: 06/16	DATE: 06/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			49	153

ST87600074, OCTOBER 2016

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REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CKD BY DATE

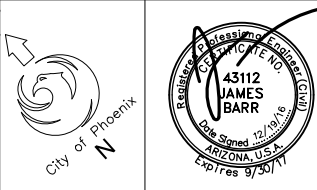
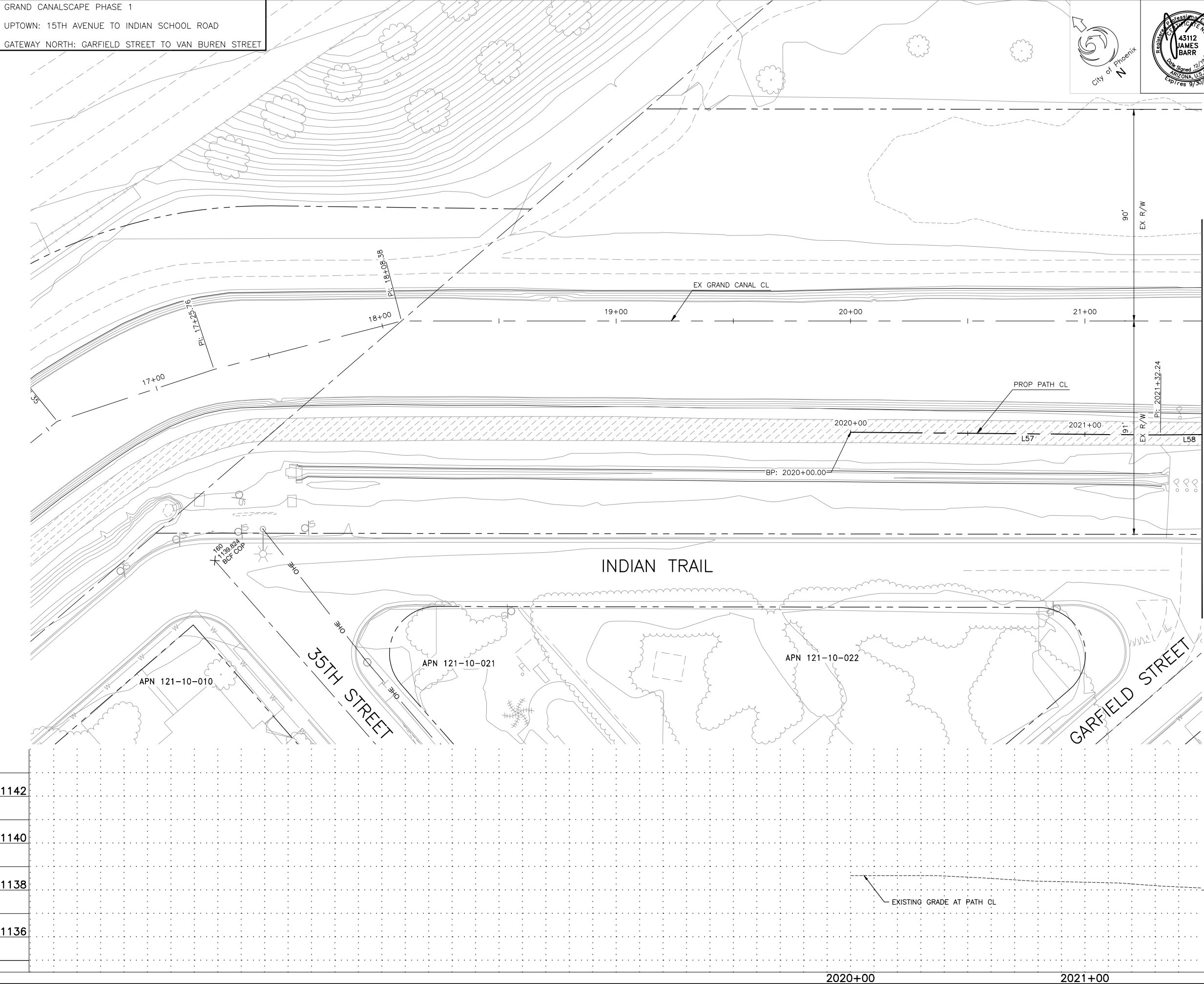
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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	50	153	.

**TY LIN INTERNATIONAL** **T.Y.LIN INTERNATIONAL**  
**engineers | planners | scientists** **CONSULTING ENGINEER**  
 REG. CFM. DR. CFM. CK. W.B. DATE: 06/10

DES: CEM	DR: CEM	CR: JAB	DATE: 06/16
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- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L57		132.24	S48° 35' 28.05"E	
L58		30.98	S49° 36' 06.35"E	

△ TBM: 60D NAIL  
 © STA: 2022+90.40, 39.08'RT  
 TOP ELEV = 1135.78



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND  
VERIFYING ELEVATIONS FOR ALL UNDERGROUND  
UTILITIES WITHIN THE PROJECT LIMITS.

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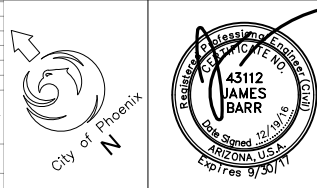
PATHWAY PLAN AND PROFILE
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			50	153



GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	51	153	
TY. LIN INTERNATIONAL engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: CEM	DR: CEM	CK: JAB	DATE: 06/16		

- ☐ M MATCH EXISTING  
☐ P PROTECT IN PLACE  
☐ S SAWCUT 2" AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
2	REMOVE ASPHALT CONCRETE	SY	550
7	REMOVE EXISTING CURB & GUTTER	LF	16
10	RELOCATE EXISTING SIGN	EA	3

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4868
2	CONCRETE S/W PER C.O.P. STD. DET. P1230, 4" THICK, WIDTH PER PLAN.	SF	1041
3	AGGREGATE BASE COURSE, 4" THICK	TON	118
4	SUBGRADE PREPARATION.	SY	802
5	ASPHALT CONCRETE FOR LOCAL STREETS (TYPE C-3/4, 4" THICK).	SY	3
9	CURB RAMP WITH DETACHED SIDEWALK PER C.O.P. STD. DET. P1241-2.	SF	207
13	HEADWALL PER SRP STANDARD HEADWALL	EA	2
14	24" RGRCP, CLASS V.	LF	53
18	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	6

LINE/CURVE DATA

Number	Radius	Length	Line/Chord Direction	A Value
L59		108.68	S47° 55' 02.16"E	
L60		1715.48	S48° 53' 14.83"E	

- △ TBM: 60D NAIL  
@ STA: 2022+90.40, 39.08'RT  
TOP ELEV = 1135.78  
△ TBM: 60D NAIL  
@ STA: 2025+15.05, 38.58'RT  
TOP ELEV = 1135.61



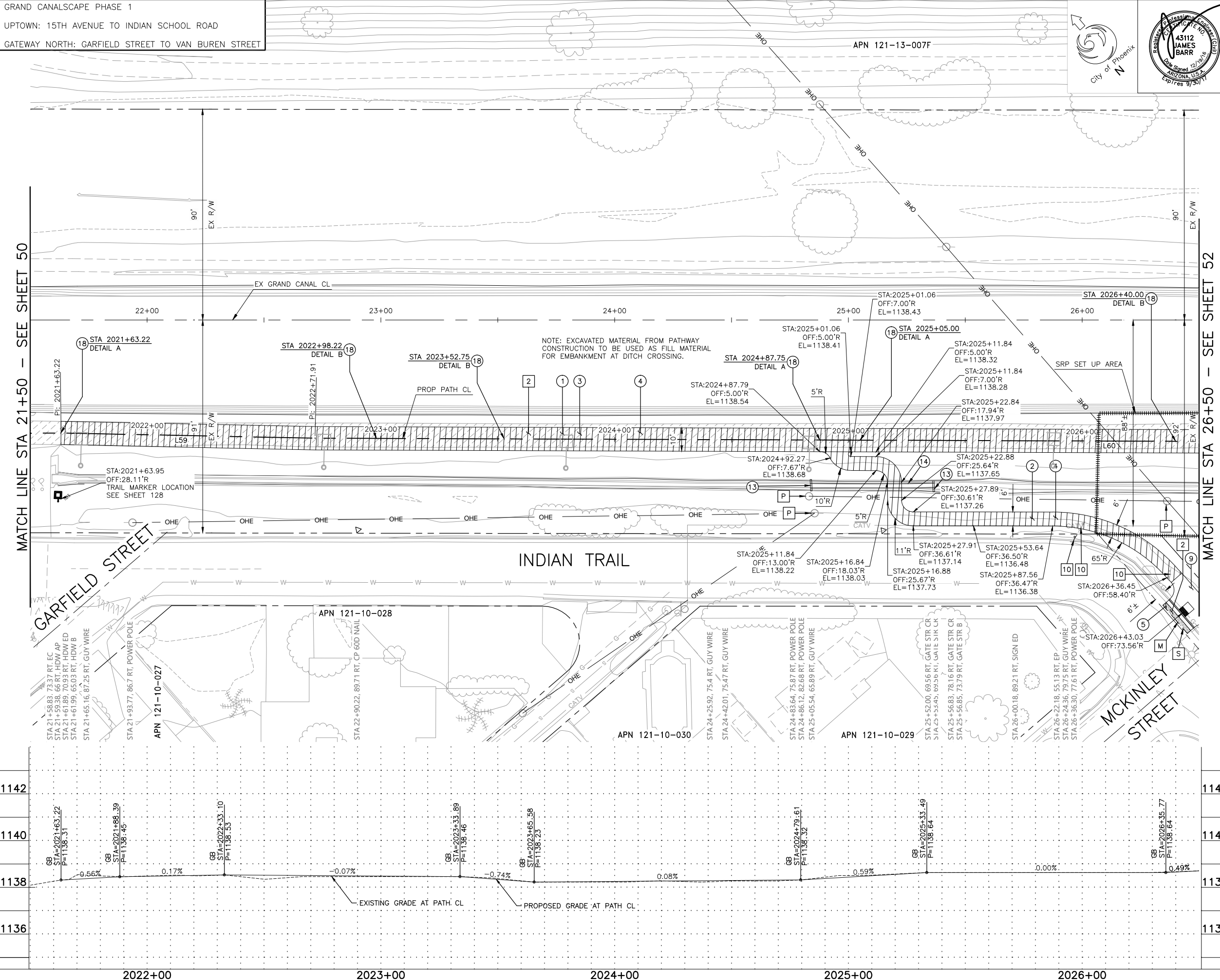
CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.  
"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	51	153
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL				



MATCH LINE STA 21+50 - SEE SHEET 50

MATCH LINE STA 26+50 - SEE SHEET 52



REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY CKD BY DATE

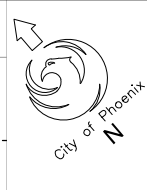
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GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

APN 121-13-007F



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	52	153	.

<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists	T.Y.LIN INTERNATIONAL CONSULTING ENGINEER
--	--

DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
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- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

## REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
2	REMOVE ASPHALT CONCRETE	SY	577

## CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5000
②	CONCRETE S/W PER C.O.P. STD. DET. P1230, 4" THICK, WIDTH PER PLAN.	SF	486
③	AGGREGATE BASE COURSE, 4" THICK	TON	121
④	SUBGRADE PREPARATION.	SY	741
⑨	CURB RAMP WITH DETACHED SIDEWALK PER C.O.P. STD. DET. P1241-2.	SF	77

## LINE/CURVE DATA

Number	Radius	Length	Line/Chord Direction	A Value
L60		1715.48	S48° 53' 14.83"E	

△ TBM: 60D NAIL  
© STA: 2025+15.05, 38.58'RT  
TOP ELEV = 1135.61



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND  
VERIFYING ELEVATIONS FOR ALL UNDERGROUND  
UTILITIES WITHIN THE PROJECT LIMITS.

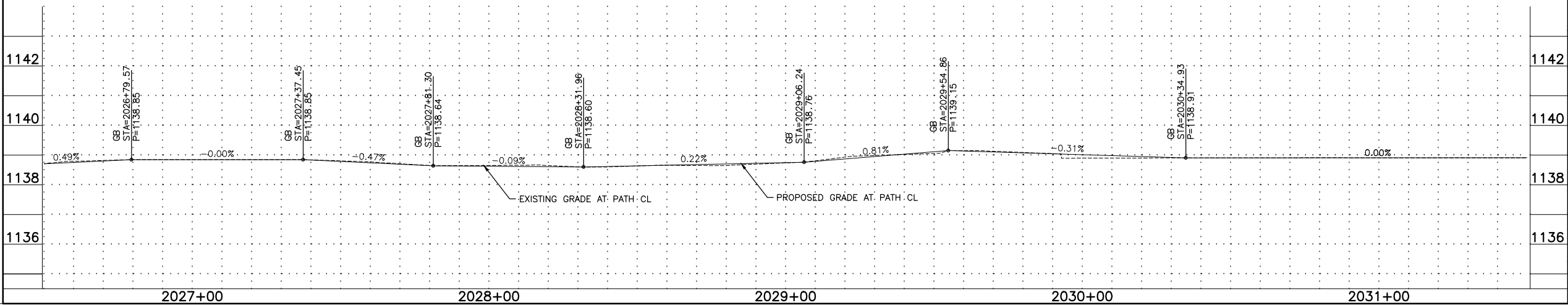
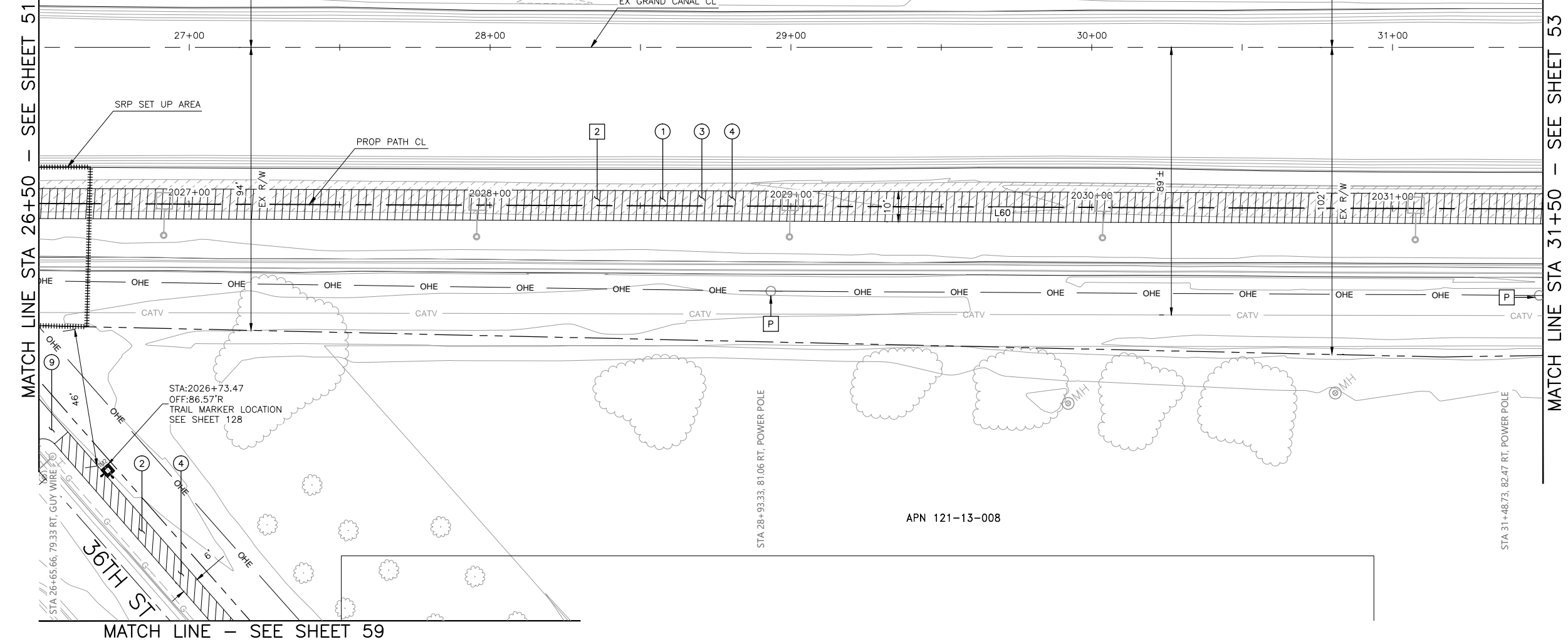
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## PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			52	153



ST87600074, OCTOBER 2016

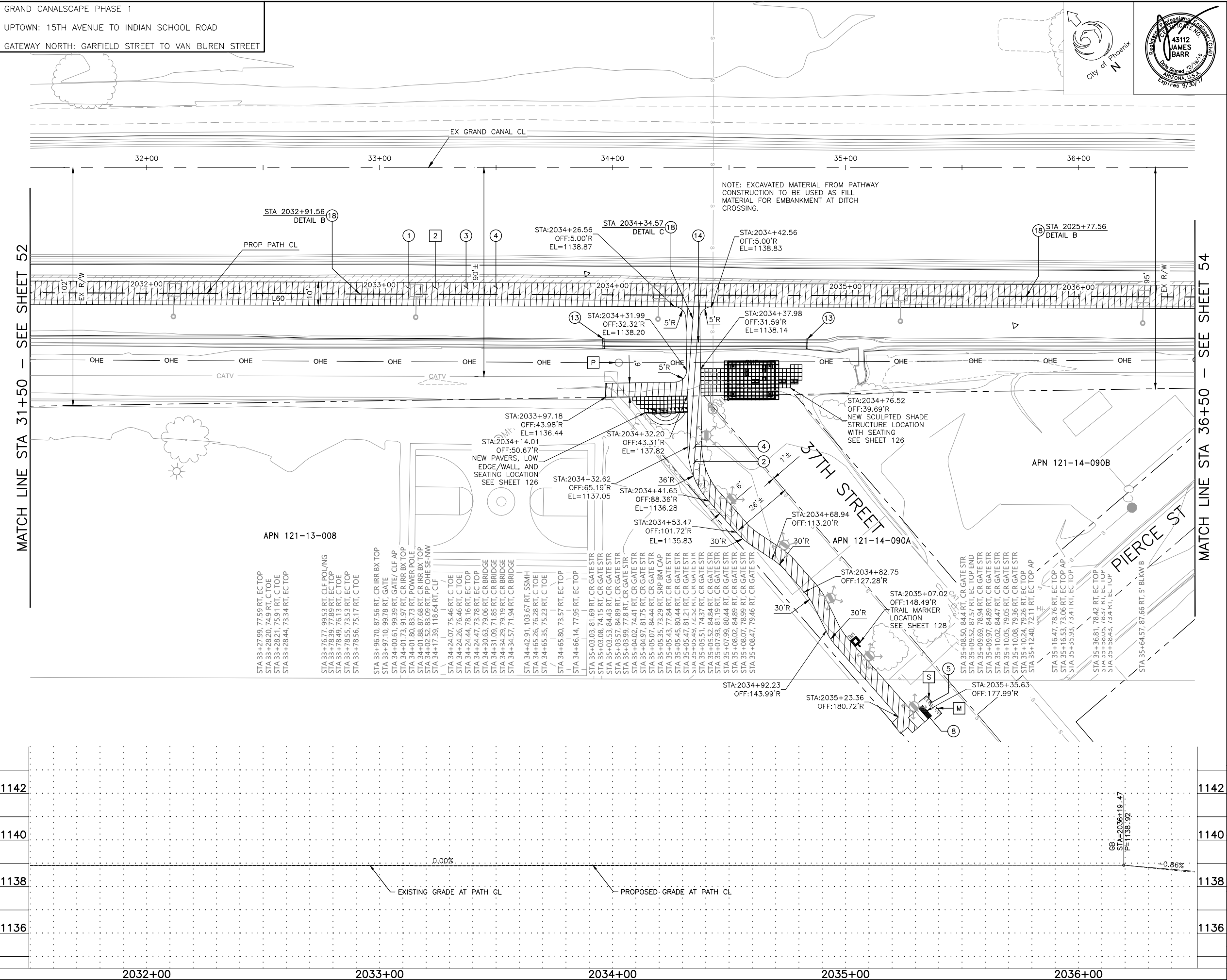
Christopher Milner  
TY Lin Half Scale.ctb

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CMD BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

MATCH LINE STA 31+50 - SEE SHEET 52



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	53	153	.
<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists			<b>T.Y. LIN INTERNATIONAL</b> CONSULTING ENGINEER		
DES: CEM		DR: CEM	CK: JAB	DATE: 06/16	
<div> <input type="checkbox"/> M MATCH EXISTING         </div> <div> <input type="checkbox"/> P PROTECT IN PLACE         </div> <div> <input type="checkbox"/> S SAWCUT 2' AND MATCH EXISTING         </div>					

REMOVALS			
NO.	DESCRIPTION	UNIT	QTY.
2	REMOVE ASPHALT CONCRETE	SY	583

CONSTRUCTION NOTES			
NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5000
②	CONCRETE S/W PER C.O.P. STD. DET. P1230, 4" THICK, WIDTH PER PLAN.	SF	1581
③	AGGREGATE BASE COURSE, 4" THICK	TON	121
④	SUBGRADE PREPARATION.	SY	898
⑤	ASPHALT CONCRETE FOR LOCAL STREETS (TYPE C-3/4, 4" THICK).	SY	2
⑧	TRUNCATED DOMES PER C.O.P. STD. DET. P1232.	SF	12
⑬	HEADWALL PER SRP STANDARD HEADWALL	EA	2
⑭	24" RGRCP, CLASS V.	LF	88
⑱	SANDBLAST SHEET NAME STENCIL PER DETAIL SHEET 19.	EA	3

LINE/CURVE DATA				
Number	Radius	Length	Line/Chord Direction	A Value
L60		1715.48	S48° 53' 14.83"E	

△ TBM: 60D NAIL  
 @ STA: 2033+88.89, 9.03'LT  
 TOP ELEV = 1138.69

△ TBM: 60D NAIL  
 @ STA: 2035+72.78, 12.45'RT  
 TOP ELEV = 1138.42



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.
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PATHWAY PLAN AND PROFILE				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074				
DR: DF	DFS: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	53	153
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			53	153

ST87600074, OCTOBER 2016

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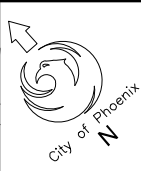
REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

APN 121-13-007E



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	54	153	.

<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists	T.Y.LIN INTERNATIONAL CONSULTING ENGINEER
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DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
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- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

## REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
2	REMOVE ASPHALT CONCRETE	SY	536

## CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
①	CONCRETE SW PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4554
③	AGGREGATE BASE COURSE, 4" THICK	TON	110
④	SUBGRADE PREPARATION.	SY	607

## LINE/CURVE DATA

Number	Radius	Length	Line/Chord Direction	A Value
L60		1715.48	S48° 53' 14.83"E	
C47	5000.00	371.93	S51° 01' 06.39"E	

△ TBM: 60D NAIL  
 © STA: 2035+72.78, 12.45'RT  
 TOP ELEV = 1138.42



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND  
VERIFYING ELEVATIONS FOR ALL UNDERGROUND  
UTILITIES WITHIN THE PROJECT LIMITS.

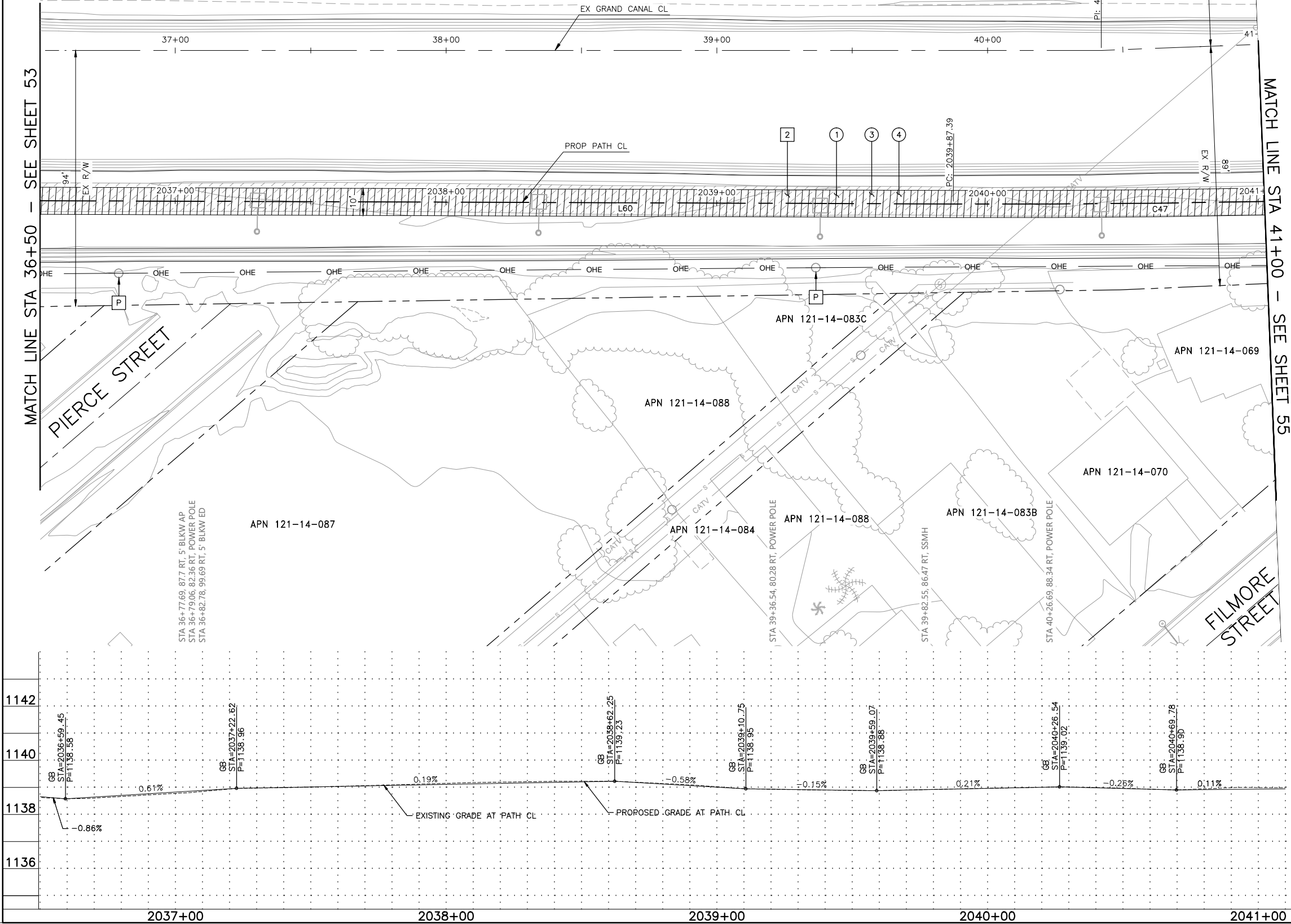
"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

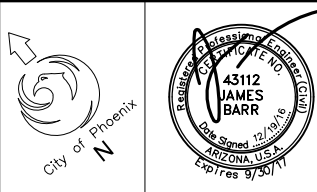
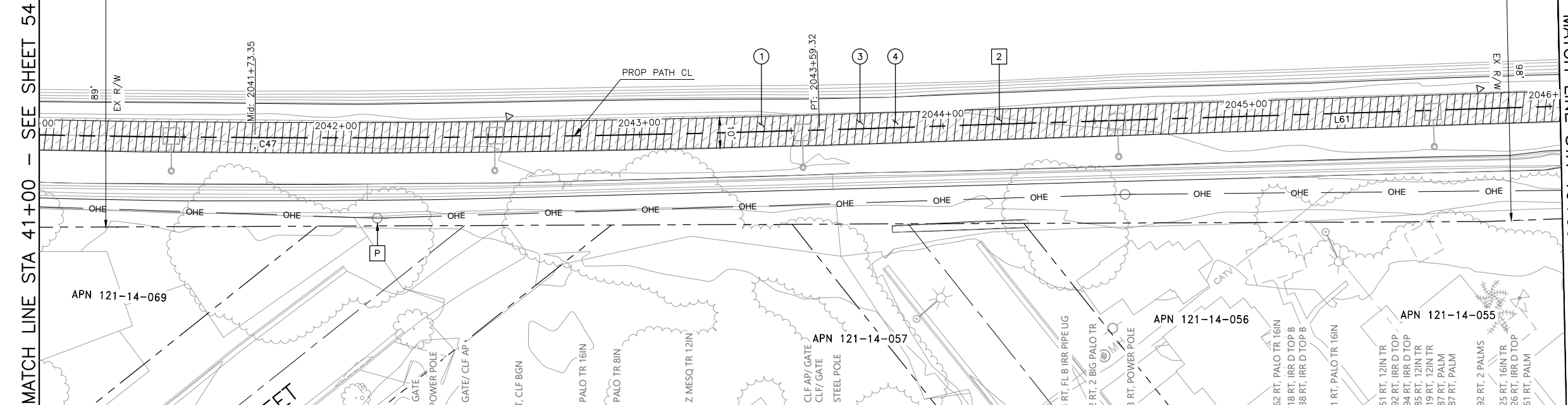
GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16		
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			54	153



REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

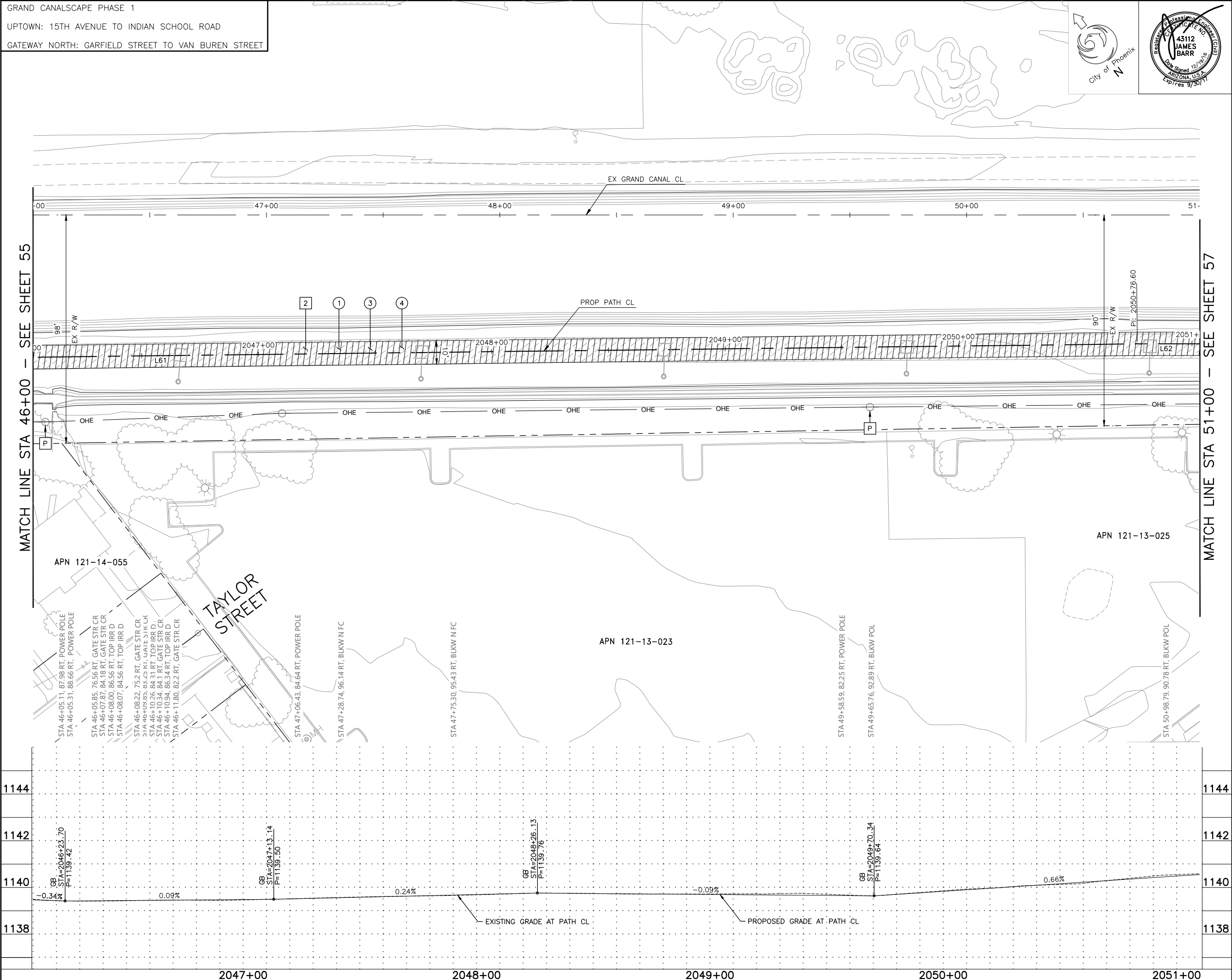
MATCH LINE STA 41+00 - SEE SHEET 54



<h1 style="text-align: center;">PATHWAY PLAN AND PROFILE</h1>				
<h2 style="text-align: center;">CITY OF PHOENIX, ARIZONA</h2>				
<h3 style="text-align: center;">STREET TRANSPORTATION DEPARTMENT</h3>				
<h1 style="text-align: center;">GRAND CANALScape Phase 1</h1>				
<h2 style="text-align: center;">UPTOWN AND GATEWAY NORTH</h2>				
<h3 style="text-align: center;">ST87600074</h3>				
DR: DF	DES: CEM	CK: JAB	SHEET	TOTAL
DATE: 06/16	DATE: 06/16	DATE: 06/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL 1" = 2' VERTICAL			55	153

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NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	56	153	.

**TY. LIN INTERNATIONAL**  
engineers | planners | scientists  
CONSULTING ENGINEER

DES: CEM DR: CEM CK: JAB DATE: 06/16

M MATCH EXISTING  
P PROTECT IN PLACE  
S SAWCUT 2' AND MATCH EXISTING

**REMOVALS**

NO.	DESCRIPTION	UNIT	QTY.
2	REMOVE ASPHALT CONCRETE	SY	599

**CONSTRUCTION NOTES**

NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	5086
3	AGGREGATE BASE COURSE, 4" THICK	TON	123
4	SUBGRADE PREPARATION.	SY	678

**LINE/CURVE DATA**

Number	Radius	Length	Line/Chord Direction	A Value
L61		1715.48	S48° 53' 14.83"E	
L62		534.14	S52° 33' 45.16"E	

△ TBM: 60D NAIL  
● STA: 2045+77.01, 6.58'LT  
TOP ELEV = 1139.40

Call at least two full working days before you begin excavation.

**ARIZONA811**  
Arizona Blue Stake, Inc.  
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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**PATHWAY PLAN AND PROFILE**

**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
UPTOWN AND GATEWAY NORTH  
ST87600074

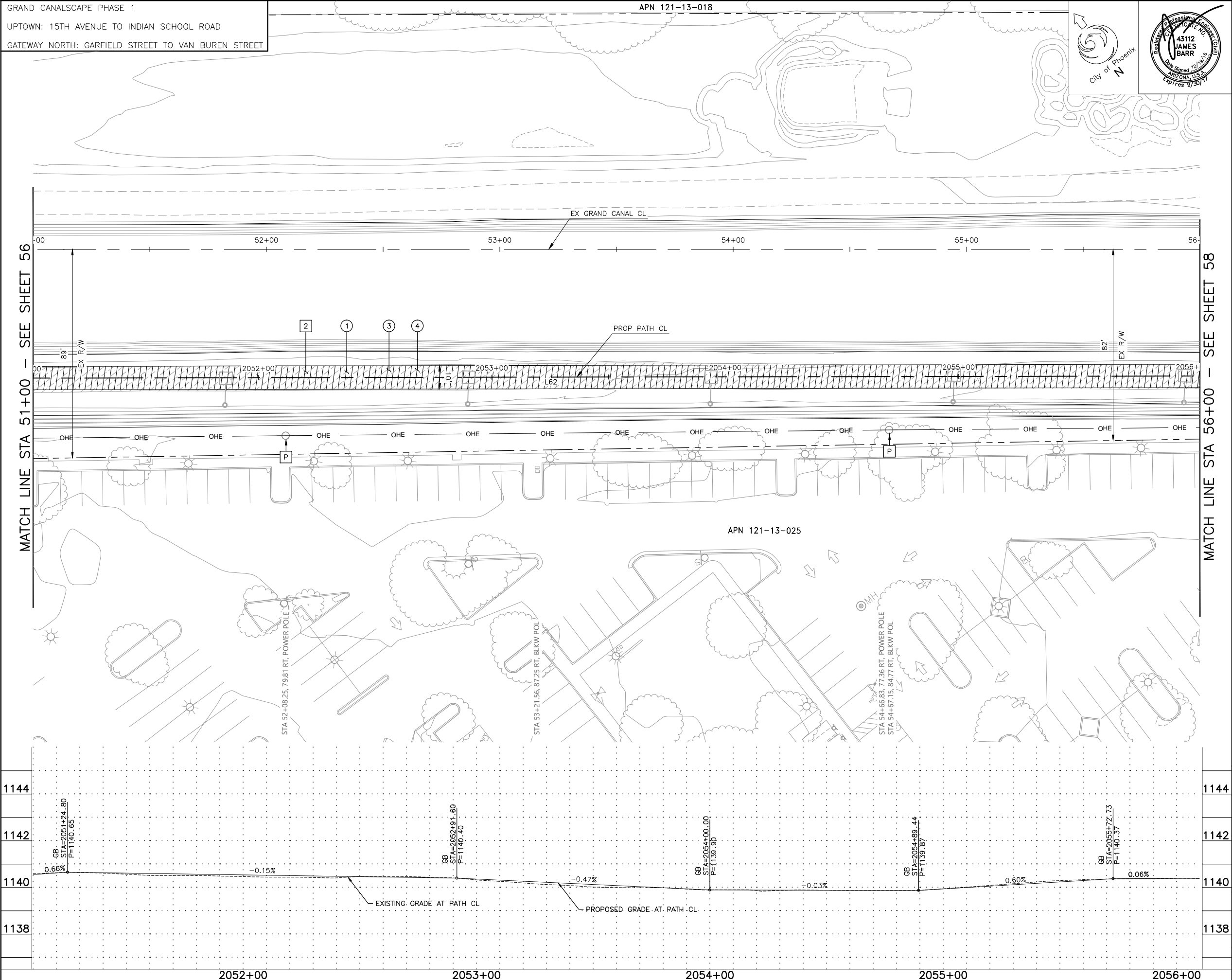
DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
DATE: 06/16	DATE: 06/16	DATE: 06/16	56	153

SCALE: 1" = 20' HORIZONTAL  
1" = 2' VERTICAL

ST87600074, OCTOBER 2016

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NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION



F.H.W.A. REGION

9

STATE

ARIZ.

PROJ. NO.

ST87600074

NO.

57

TOTAL

153

AS BUILT

**TY. LIN INTERNATIONAL**  
engineers | planners | scientists

T.Y. LIN INTERNATIONAL  
CONSULTING ENGINEER

DES: CEM

DR: CEM

CK: JAB

DATE: 06/16

M

MATCH EXISTING

P

PROTECT IN PLACE

S

SAWCUT 2' AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
2	REMOVE ASPHALT CONCRETE	SY	578

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	4914
3	AGGREGATE BASE COURSE, 4" THICK	TON	119
4	SUBGRADE PREPARATION.	SY	655

LINE/CURVE DATA

Number	Radius	Length	Line/Chord Direction	A Value
L62		534.14	S52° 33' 45.16"E	

△ TBM: 60D NAIL  
◎ STA: 2057+30.72, 3.72'LT  
TOP ELEV = 1140.41

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PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF

DES: CEM

CK: JAB

SHEET NO: 57

TOTAL SHEETS: 153

DATE: 06/16

DATE: 06/16

DATE: 06/16

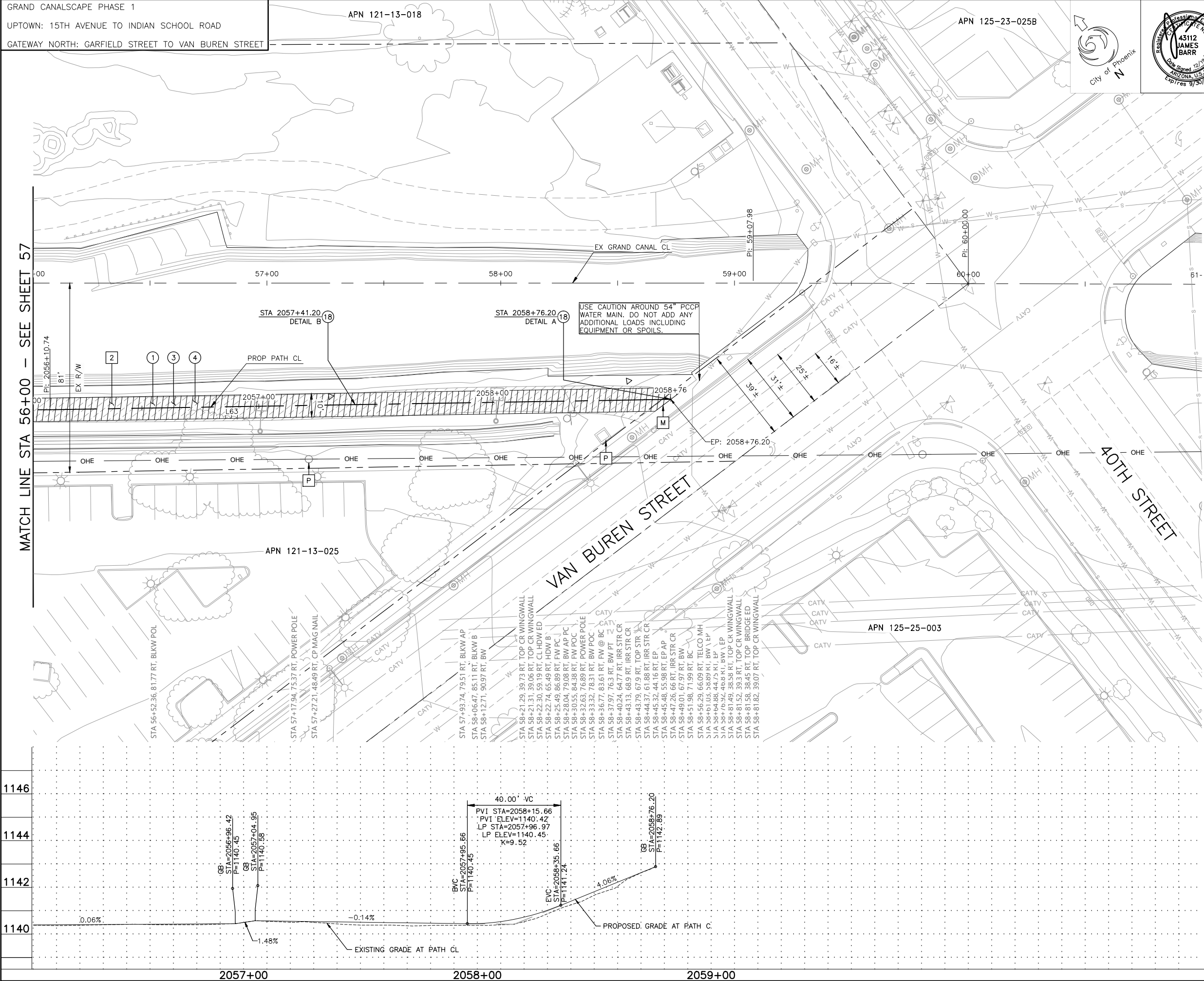
SCALE: 1" = 20' HORIZONTAL  
1" = 2' VERTICAL

ST87600074, OCTOBER 2016



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F.H.W.A. REGION  
9

STATE  
ARIZ.

PROJ. NO.  
ST87600074

NO.  
58

TOTAL  
153

AS BUILT  
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**TY. LIN INTERNATIONAL**  
engineers | planners | scientists

T.Y.LIN INTERNATIONAL  
CONSULTING ENGINEER

DES: CEM

DR: CEM

CK: JAB

DATE: 06/16

M MATCH EXISTING

P PROTECT IN PLACE

S SAWCUT 2' AND MATCH EXISTING

REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
2	REMOVE ASPHALT CONCRETE	SY	331

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
1	CONCRETE S/W PER C.O.P. STD. DET. P1230, PER TYPICAL SECTIONS, WIDTH PER PLAN.	SF	2728
3	AGGREGATE BASE COURSE, 4" THICK	TON	66
4	SUBGRADE PREPARATION.	SY	364
18	SANDBLAST STREET NAME STENCIL PER DETAIL SHEET 19.	EA	2

LINE/CURVE DATA

Number	Radius	Length	Line/Chord Direction	A Value
L63		265.46	S53° 24' 54.04"E	

△ TBM: 60D NAIL  
● STA: 2057+30.72, 3.72'L  
TOP ELEV = 1140.41

△ TBM: 60D NAIL  
● STA: 2058+58.28, 8.20'L  
TOP ELEV = 1141.85

Call at least two full working days before you begin excavation.

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PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF  
DATE: 06/16

DES: CEM  
DATE: 06/16

CK: JAB  
DATE: 06/16

SHEET NO:  
58

TOTAL SHEETS  
153



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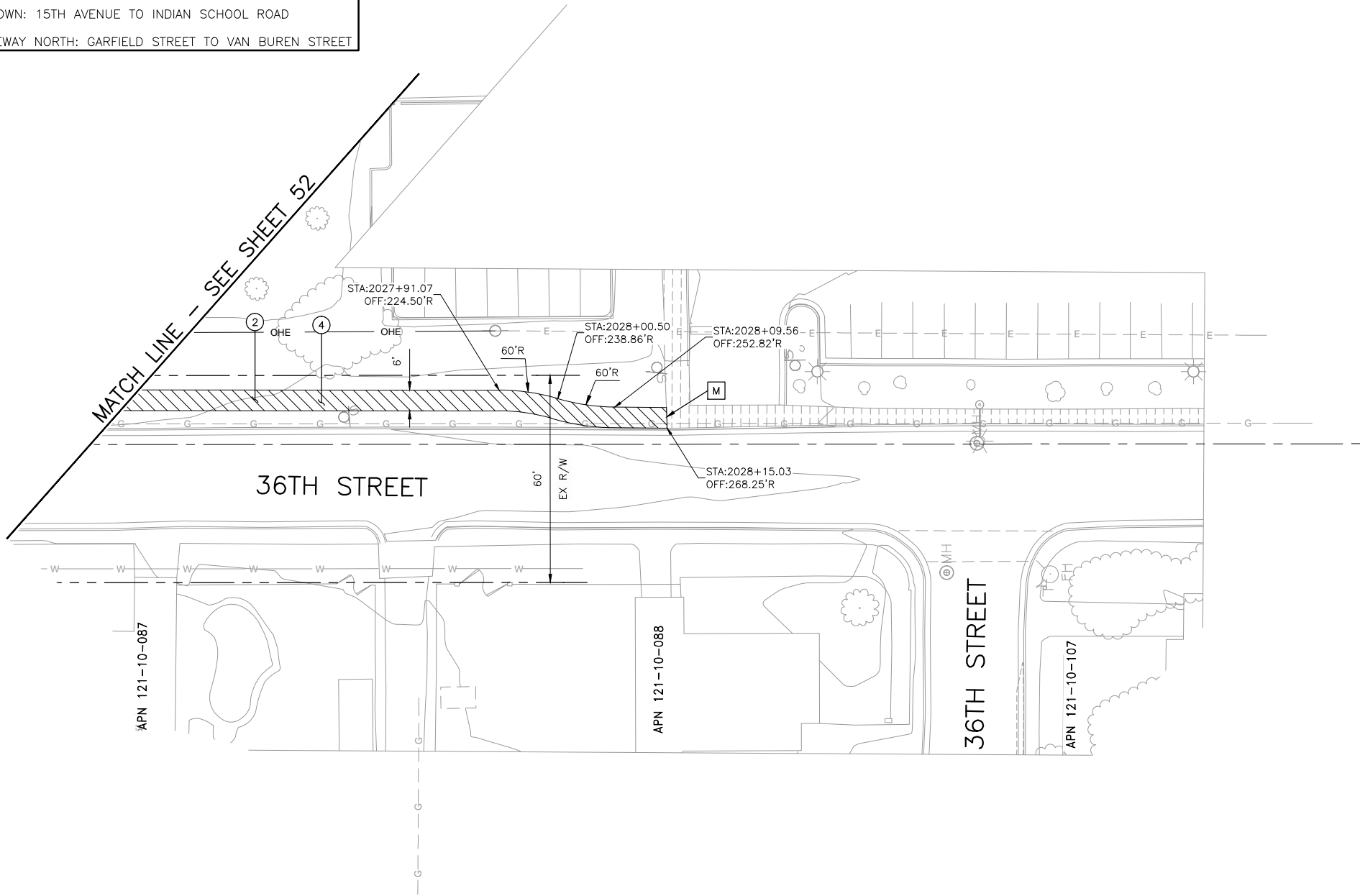
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REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	59	153	.

<b>T.Y. LIN INTERNATIONAL</b> engineers   planners   scientists	T.Y.LIN INTERNATIONAL CONSULTING ENGINEER
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DES: CEM	DR: CEM	CK: JAB	DATE: 06/16
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- |   |                              |
|---|------------------------------|
| M | MATCH EXISTING               |
| P | PROTECT IN PLACE             |
| S | SAWCUT 2' AND MATCH EXISTING |

## REMOVALS

NO.	DESCRIPTION	UNIT	QTY.
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## CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY.
②	CONCRETE SW PER C.O.P. STD. DET. P1230, 4" THICK, WIDTH PER PLAN.	SF	997
④	SUBGRADE PREPARATION.	SY	148

△ TBM: 60D NAIL  
© STA: 2025+15.05, 38.58'RT  
TOP ELEV = 1135.61



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## PATHWAY PLAN AND PROFILE

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: DF	DES: CEM	CK: JAB	SHEET NO:	TOTAL SHEETS
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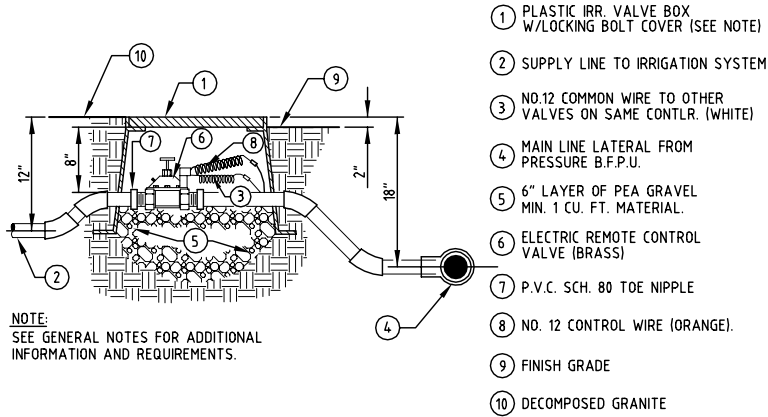


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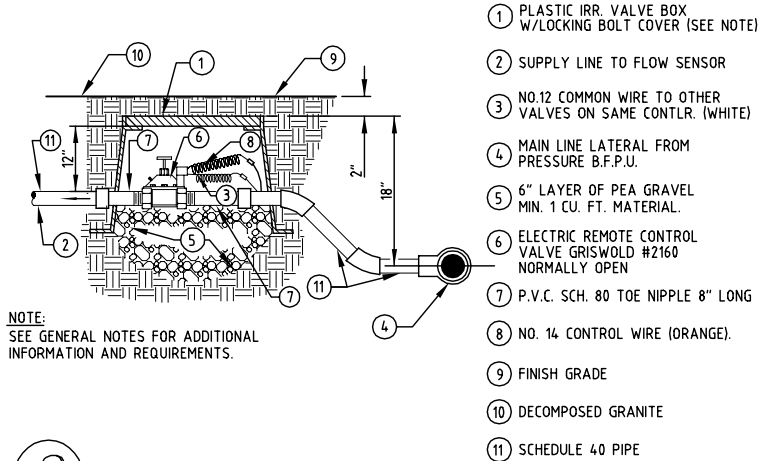
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GRAND CANALSCAPE PHASE 1					
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD					
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET					



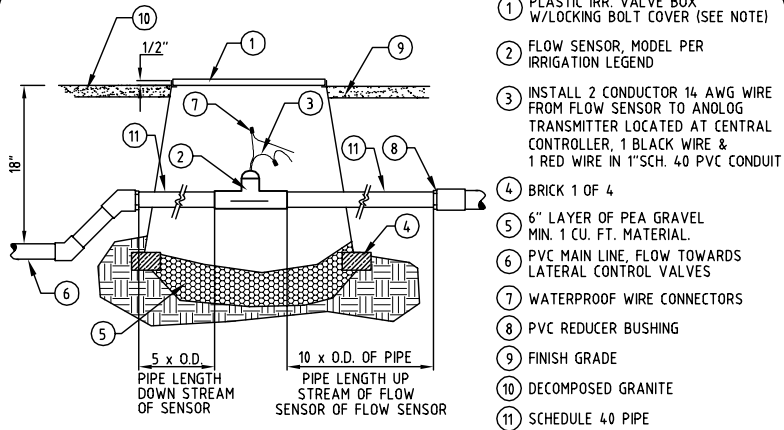
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	61	153	
DES: JEB/JDH DR: AJA/JDH CK: JEB DATE: 12/16					



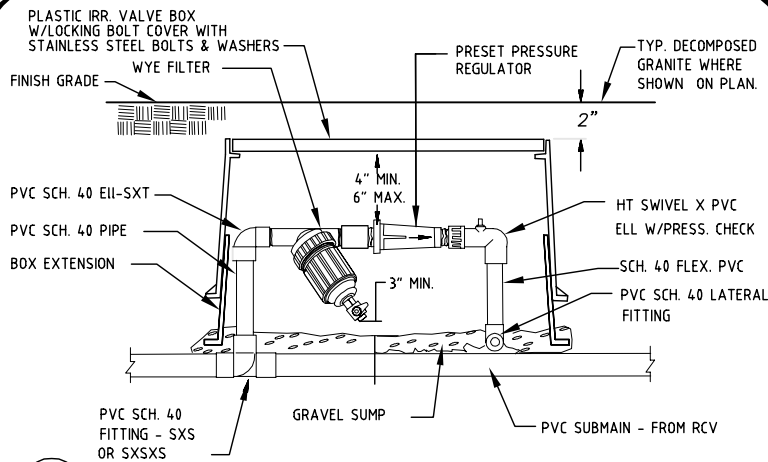
1 SOLENOID VALVE ASSEMBLY  
NOT TO SCALE IRR-VAL-01



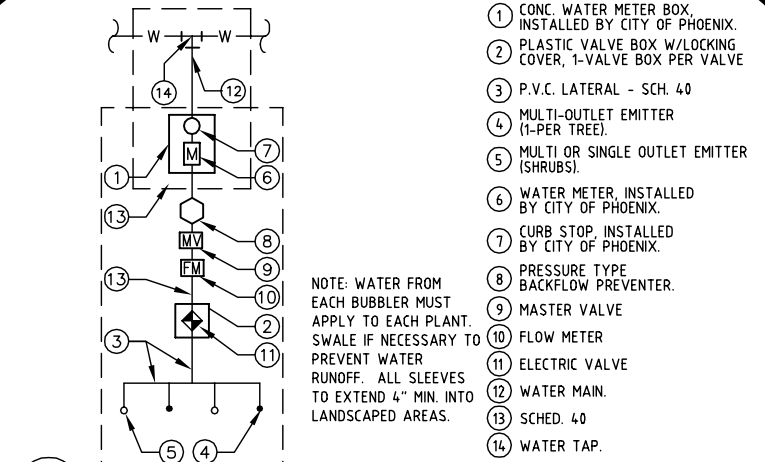
2 MASTER VALVE ASSEMBLY (NORMALLY OPEN) MV  
NOT TO SCALE



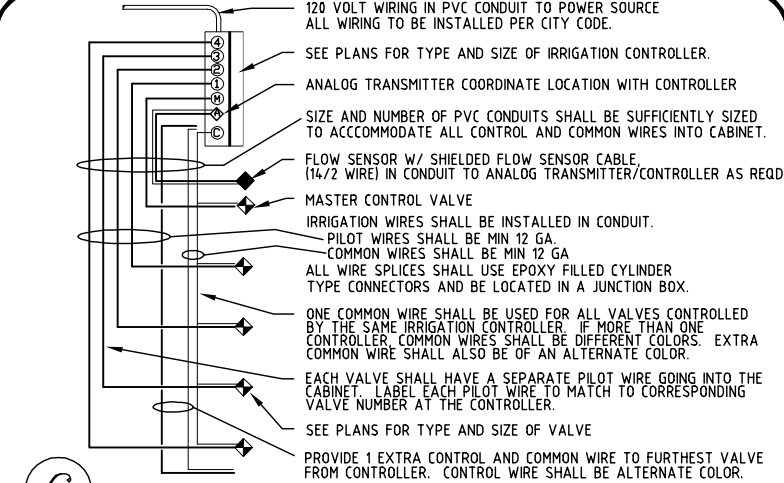
3 FLOW SENSOR ASSEMBLY  
NOT TO SCALE IRR-FLO-01



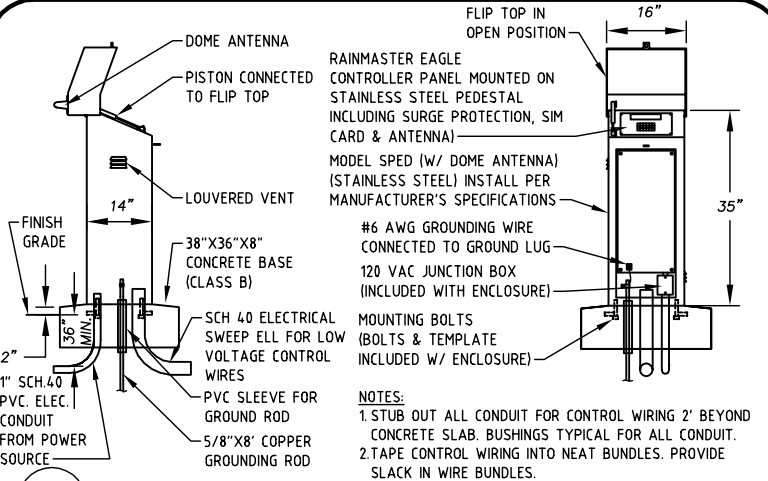
4 PRESSURE REGULATOR ASSEMBLY  
NOT TO SCALE



5 WATER SYSTEM SCHEMATIC  
NOT TO SCALE



6 CONTROLLER WIRING  
NOT TO SCALE IRR-CTL-03



7 PRE-ASSEMBLED IRRIGATION CONTROLLER ENCLOSURE  
NOT TO SCALE

### GENERAL NOTES:

VALVE NOTES:  
(1) ONLY ONE VALVE PER VALVE BOX, AND ALL HARDWARE TO BE STAINLESS STEEL. ANY BOLTS ON COVER TO HAVE WASHERS.  
(2) PROVIDE EXPANSION COILS AT EACH WIRE CONNECTION IN VALVE BOX. (WRAP AROUND 1/2" PIPE 15-TIMES).  
(3) STEP-UP VALVE W/45 DEG. FITTINGS TO MAINTAIN 6" BETWEEN VALVE AND TOP OF BOX.  
(4) EMBOSS COVER WITH 1/2" NO. WHICH CORRESPONDS TO VALVE NO. ON IRRIGATION PLANS.  
(5) CONTRACTOR TO PROVIDE A LIST OF GPS COORDINATE POINTS FOR ALL VALVE BOXES THAT ARE TO BE BURIED)

SLEEVE NOTES:  
(1) SLEEVE UNDER ALL PAVEMENT AND DRIVEWAY THAT ARE CROSSED WITH IRRIGATION PIPE OR CONTROLLER WIRE.  
(2) USE SCHEDULE 40 PIPE. SIZES AS FOLLOWED UNLESS OTHERWISE NOTED ON PLANES; FOR PIPES 1/2" TO 1-1/4", USE 3" SLEEVE, FOR PIPES 1-1/2" TO 2", USE 4" SLEEVE, AND FOR CONTROLLER WIRE, USE 3" SLEEVE.  
(3) ALL SLEEVES FOR CONTROLLER WIRE, CROSSING STREET PAVING SHALL HAVE A PULL BOX AT EACH END, ALL WIRE SHALL HAVE PENN-TIE CONNECTORS IN EACH PULL BOX.  
(4) ALL CONTROLLER WIRE SPLICES SHALL BE CONTAINED WITHIN A PULLBOX.

M.A.G. NOTE:  
SEE M.A.G. SPECIFICATIONS, CITY OF PHOENIX SUPPLEMENT TO M.A.G., SPECIAL PROVISIONS AND DETAILS FOR ADDITIONAL REQUIREMENTS.

IRRIGATION NOTE:  
(1) IRRIGATION DESIGN IS SCHEMATIC ONLY. ALL CONSTRUCTION AND INSTALLATION OF IRRIGATION SYSTEM SHALL BE WITHIN CITY RIGHTS-OF-WAY OR EASEMENTS. REFER TO LANDSCAPING SPECS. AND DETAILS FOR ADDITIONAL INFORMATION.  
(2) IRRIGATION LINE SIZES ARE AS SHOWN. FOR ANY DISCREPANCIES NOTIFY LANDSCAPE ARCHITECT.

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### LANDSCAPE DETAILS

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	61	153
SCALE: 1" = 20' HORIZONTAL				

ST87600074, 12/5/16

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Joel Hornum

TY Lin Half Scale.ctb

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DESCRIPTION		DESCRIPTION		DESCRIPTION	
NO.		NO.		NO.	
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DATE		DATE		DATE	

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

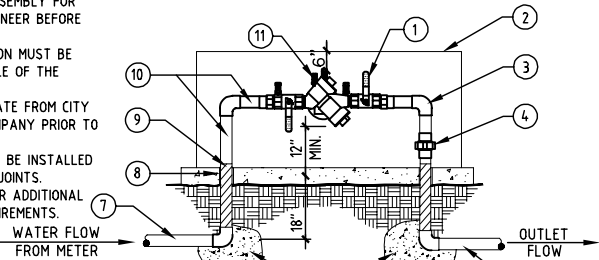


F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	62	153	
Gavan Barker Civil Engineering - Landscape Architecture 3030 North Central Avenue, Suite 1100, Phoenix, Arizona 85018 Ph: 602-263-0074 Fx: 602-263-0033					
DES: JEB/JDH		DR: AJA/JDH		CK: JEB	DATE: 12/16

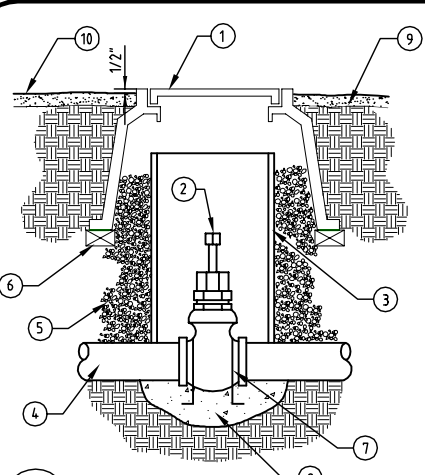
NOTE:

1. ALL PIPE / FITTINGS TO BE TYPE "L" COPPER.
  2. ASSEMBLY SHALL BE APPROVED BY U.S.C. FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
  3. NSTALL BACKFLOW PREVENTION ASSEMBLY WITH RELIEF PORT FACING TOWARD THE GROUND.
  4. BACKFLOW PREVENTION ASSEMBLY MUST BE LEVEL AND INSTALLED A MINIMUM OF 12 INCHES FROM RELIEF PORT TO GRADE.
  5. TEST COCKS, (4) SHALL BE FITTED WITH BRASS PLUGS AND INST. W/ TEFLON TAPE.
  6. SHUTOFF VALVES TO BE RESILIENT BALL TYPE W/ RMOVABLE HANDLES.
  7. COMPRESSION TYPE FITTINGS ARE NOT ALLOWED.
  8. STAKE LOCATION OF ASSEMBLY FOR APPROVAL BY THE ENGINEER BEFORE INSTALLATION BEGINS.
  9. A COPPER / BRASS UNION MUST BE INSTALLED IN THE MIDDLE OF THE DOWNSTREAM RISER.
  10. PROVIDE TEST CERTIFICATE FROM CITY APPROVED TESTING COMPANY PRIOR TO APPROVAL.
  11. COPPER FITTINGS SHALL BE INSTALLED W/ LEAD FREE SOLDER JOINTS.
  12. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
1. BALL VALVE W/ REMOVABLE HANDLE (TYP.)
  2. SECURITY CAGE
  3. COPPER / 90 ELBOWS
  4. BRASS OR COPPER UNION
  5. IRRIGATION MAINLINE, CLASS & SIZE PER PLANS & SPEC.
  6. THRUST BLOCKS SEE DETAIL
  7. MAINLINE PIPING METER TO RPPB DEVISE: SCH 80 PVC (EXCEPT W/ IN ROW USE TYPE "L" COPPER)
  8. EXPANSION JOINT 1/2" FILLER STRIP
  9. WRAP PIPE BELOW GRADE FOR CORROSION PROTECTION PER MAG 753.2
  10. COPPER SPOOL (TYPE L) TYP. BETWEEN FITTINGS
  11. TEST COCKS W/BRASS PLUGS OR ADAPTORS W/ CAPS INSTALLED. (4 REQUIRED)

NOTE: USE COP SUPPLEMENT DET. 1351 FOR ASSEMBLIES 3" AND OVER



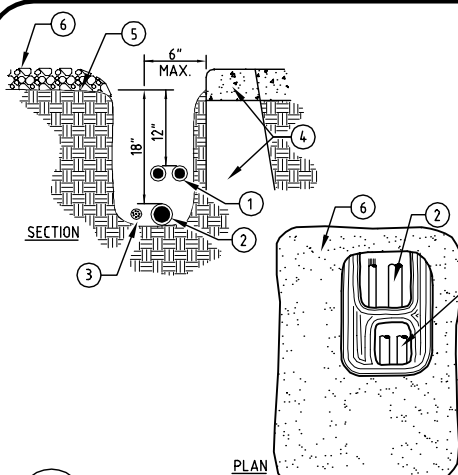
1 REDUCE PRESSURE BACKFLOW ASSEMBLY (2.5 INCH AND UNDER) IRR-BFP-05  
NOT TO SCALE



2 ISOLATION VALVE IRR-VAL-03  
NOT TO SCALE

1. VALVE BOX WITH BOLT LOCKING COVER
2. GATE VALVE W/OPERATING NUT
3. 6 INCH PVC SEWER PIPE (LENGTH AS REQUIRED)
4. PVC MAIN LINE LATERAL FROM PRESSURE B.F.P.U. OFF METER
5. BACKFILL TO DEPTH OF SEWER PIPE W/3" OF 3/4 INCH WASHED GRAVEL
6. BRICK (1 OF 4)
7. NO. 4 REBAR WITH MASTIC COATING (1 OF 2)
8. 6 INCH THICK CONCRETE BASE
9. FINISH GRADE
10. DECOMPOSED GRANITE

NOTE: NOMINAL SIZE OF GATE VALVE TO MATCH NOMINAL SIZE OF MAINLINE PIPE



3 TRENCHING DETAIL IRR-TRH-01  
NOT TO SCALE

1. IRRIGATION LATERAL LINE (TREE & SHRUB)
2. IRRIGATION MAIN LINE
3. CONTROL WIRING IN CONDUIT
4. SIDEWALK OR CURB
5. FINISH GRADE
6. DECOMPOSED GRANITE SEE SPECS

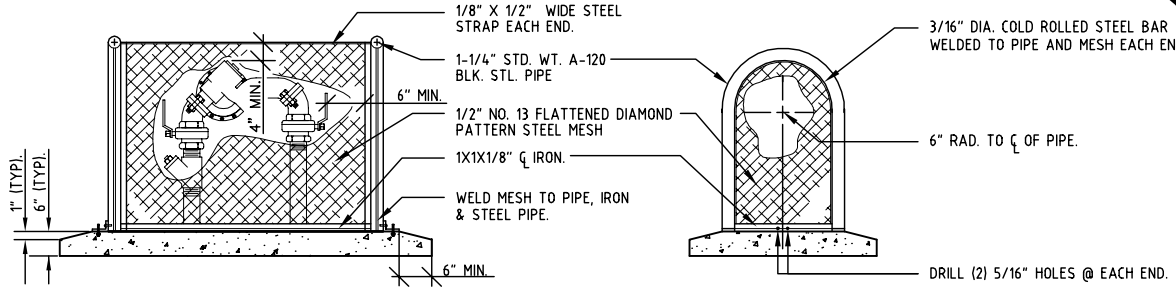
NOTE: SEE GENERAL NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

DEPTH DIMENSION MAY VARY WHERE INDICATED ON IRRIGATION PLANS.

ALL PIPE INSTALLATION, TRENCH EXCAVATION, BACK FILLING AND COMPACTION SHALL CONFORM WITH MAG. SECTION 401.3 AND 601.

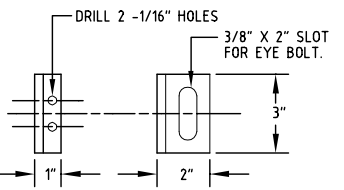
CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL VERIFY DIMENSIONS PRIOR TO CONSTRUCTION OF ENCLOSURE, AND EXACT LOCATION.
2. THE ENCLOSURE SHALL BE BUILT WITH 1" X 1" X 1/8" IRON. ALL BOLTS & HASPS SHALL BE ZINC PLATED AND TAMPER PROOF.
3. FABRIC SHALL BE 1/2" No. 13 FLATTEN DIAMOND PATTERN STEEL MESH. WELD 1/8" X 1/2" WIDE STEEL STRAPS. (ALL WELDED AREAS SHALL BE A MIN. OF 1/4" BEAD EVERY 4").
4. THE ENCLOSURE SHALL SIT ON A CLASS "B" CONCRETE SLAB. THE SLAB SHALL HAVE 6" CONCRETE STRIP ON ALL 4 SIDES. TOP OF SLAB SHALL BE 1" ABOVE FIN. GRADE.
5. AFTER WELDING, GRIND ALL WELD SPOTS SMOOTH AND SANDBLAST ENTIRE UNIT, THEN PROCESSED WITH IRON PHOSPHATE PRETREATMENT.
6. PAINT SPECS: ELECTRO-STATIC APPLICATION OF POWDER (PER A.S.T.M. D3451) SHALL BE FUSION BONDED EPOXY-MORTON PU94175 (DESERT TAN) (5-MILS THICK) OR APPROVED EQUAL.
7. OBTAIN TWO PADLOCKS (ONE EACH SIDE), PROVIDED BY THE PARKS DEPARTMENT.



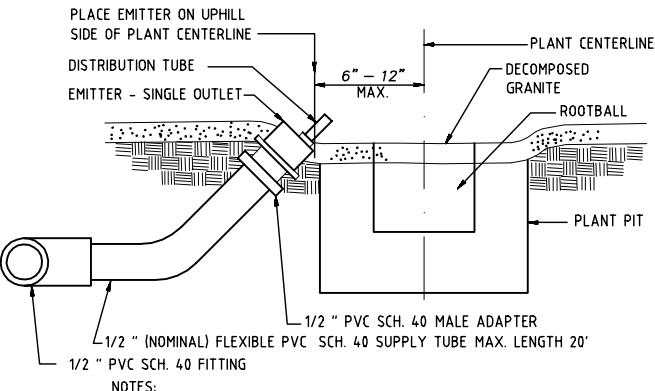
BRACKET DETAIL

1. SET EYE BOLT WITH BOTTOM OF CIRCLE FLUSH WITH CONCRETE BASE, THEN EYE BOLT CANNOT BE TURNED WHEN IN BRACKET.
2. BOLT BRACKET TO ENCLOSURE ON END, USE 1/4" X 1/4" TAMPER PROOF BOLTS WITH HEX NUTS AND WASHERS.

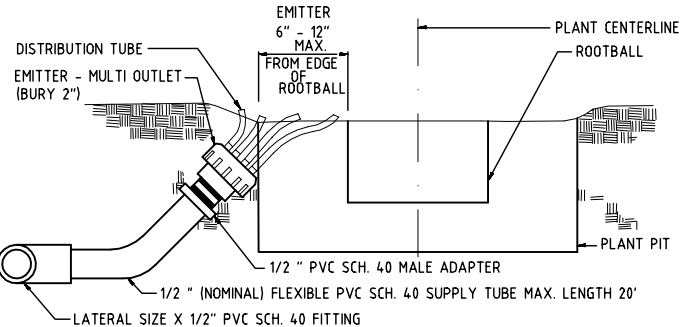


IRR-BFP-04

4 B.F.P.U. SECURITY ENCLOSURE ASSEMBLY  
NOT TO SCALE

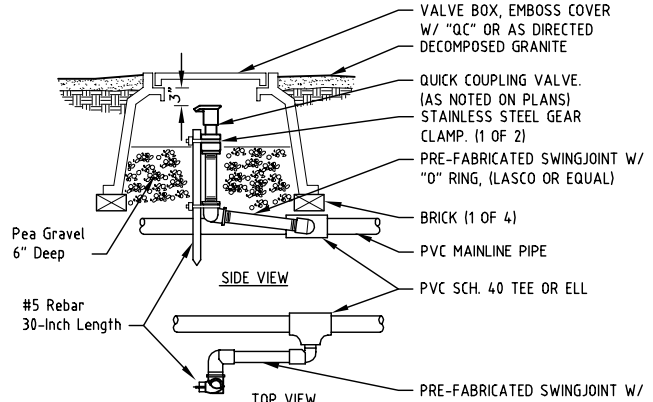


6 SINGLE-OUTLET EMITTER  
NOT TO SCALE



- NOTES:
1. EMISSION POINTS SHALL BE LOCATED UNIFORMLY AROUND PLANT AND 3 OF 6 EMISSION POINTS SHALL DELIVER WATER DIRECTLY TO ROOTBALL (TYP.)
  2. ALL BASINS TO BE 2" DEEP. BASINS TO BE SAME DIAMETER AS PLANT PIT. 1 GAL. EQUALS 12", 5 GAL. EQUALS 24".
  3. PLACE 3 DISTRIBUTION TUBES WITHIN BASIN AND 3 TUBES 12" FROM BASIN EDGE.

7 MULTI-OUTLET EMITTER  
NOT TO SCALE



8 QUICK COUPLING VALVE ASSEMBLY  
NOT TO SCALE

GENERAL NOTES:

- VALVE NOTES:
- (1) ONLY ONE VALVE PER VALVE BOX, AND ALL HARDWARE TO BE STAINLESS STEEL. ANY BOLTS ON COVER TO HAVE WASHERS.
  - (2) PROVIDE EXPANSION COILS AT EACH WIRE CONNECTION IN VALVE BOX. (WRAP AROUND 1/2" PIPE 15-TIMES).
  - (3) STEP-UP VALVE W/45 DEG. FITTINGS TO MAINTAIN 6" BETWEEN VALVE AND TOP OF BOX.
  - (4) EMBOSS COVER WITH 1/2" NO. WHICH CORRESPONDS TO VALVE NO. ON IRRIGATION PLANS.
  - (5) CONTRACTOR TO PROVIDE A LIST OF GPS COORDINATE POINTS FOR ALL VALVE BOXES THAT ARE TO BE BURIED)

- SLEEVE NOTES:
- (1) SLEEVE UNDER ALL PAVEMENT AND DRIVEWAY THAT ARE CROSSED WITH IRRIGATION PIPE OR CONTROLLER WIRE.
  - (2) USE SCHEDULE 40 PIPE. SIZES AS FOLLOVED UNLESS OTHERWISE NOTED ON PLANES; FOR PIPES 1/2" TO 1-1/4", USE 3" SLEEVE, FOR PIPES 1-1/2" TO 2", USE 4" SLEEVE, AND FOR CONTROLLER WIRE, USE 3" SLEEVE.
  - (3) ALL SLEEVES FOR CONTROLLER WIRE, CROSSING STREET PAVING SHALL HAVE A PULL BOX AT EACH END, ALL WIRE SHALL HAVE PENN-TIE CONNECTORS IN EACH PULL BOX.
  - (4) ALL CONTROLLER WIRE SPLICES SHALL BE CONTAINED WITHIN A PULLBOX.

- M.A.G. NOTE:
- SEE M.A.G. SPECIFICATIONS, CIRT OF PHOENIX SUPPLEMENT TO M.A.G., SPECIAL PROVISIONS AND DETAILS FOR ADDITIONAL REQUIREMENTS.

- IRRIGATION NOTE:
- (1) IRRIGATION DESIGN IS SCHEMATIC ONLY. ALL CONSTRUCTION AND INSTALLATION OF IRRIGATION SYSTEM SHALL BE WITHIN CITY RIGHTS-OF-WAY OR EASMENTS. REFER TO LANDSCAPING SPECS. AND DETAILS FOR ADDITIONAL INFORMATION.
  - (2) IRRIGATION LINE SIZES ARE AS SHOWN. FOR ANY DISCREPANCIES NOTIFY LANDSCAPE ARCHITECT.

EMITTER SCHEDULE

PLANT SIZE	EMITTER TYPE	GAL./HOUR
Existing Tree	Multi-Outlet / 2 GPH (2)	24
Existing Shrub	Single-Outlet / 1 GPH	1
24" box	Multi-Outlet / 2 GPH	12
5 Gal.	Multi-Outlet / 1 GPH	1
5 Gal	Single-Outlet / 1 GPH	1
1 Gal.	Multi-Outlet / 1 GPH	1
1 Gal.	Single-Outlet / 1 GPH	1

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

LANDSCAPE DETAILS

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

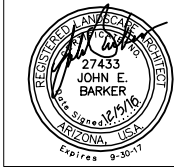
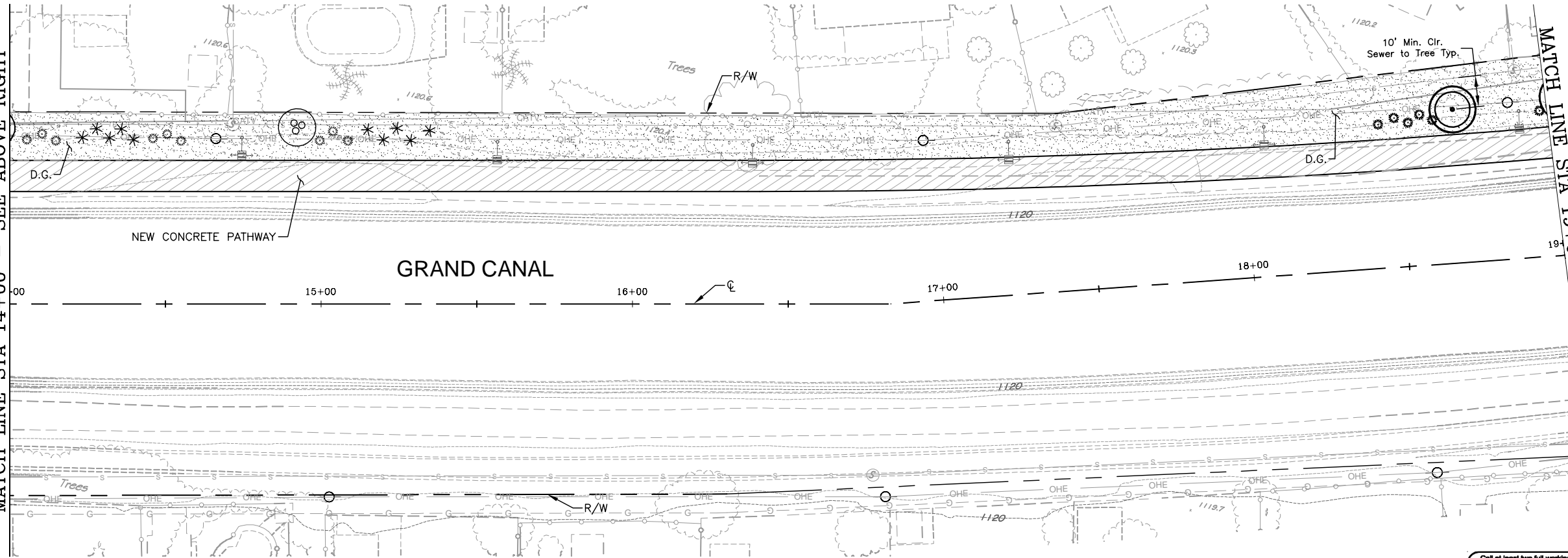
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			62	153

ST87600074, 12/5/16



MATCH LINE STA 14+00 - SEE ABOVE RIGHT

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE



## PLANT LIST

For landscape areas within SRP right-of-way.

**PLANT LIST - Additional**  
Plants for landscape areas outside of SRP  
right-of-way only.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			63	153

NO.	REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CKD BY	DATE

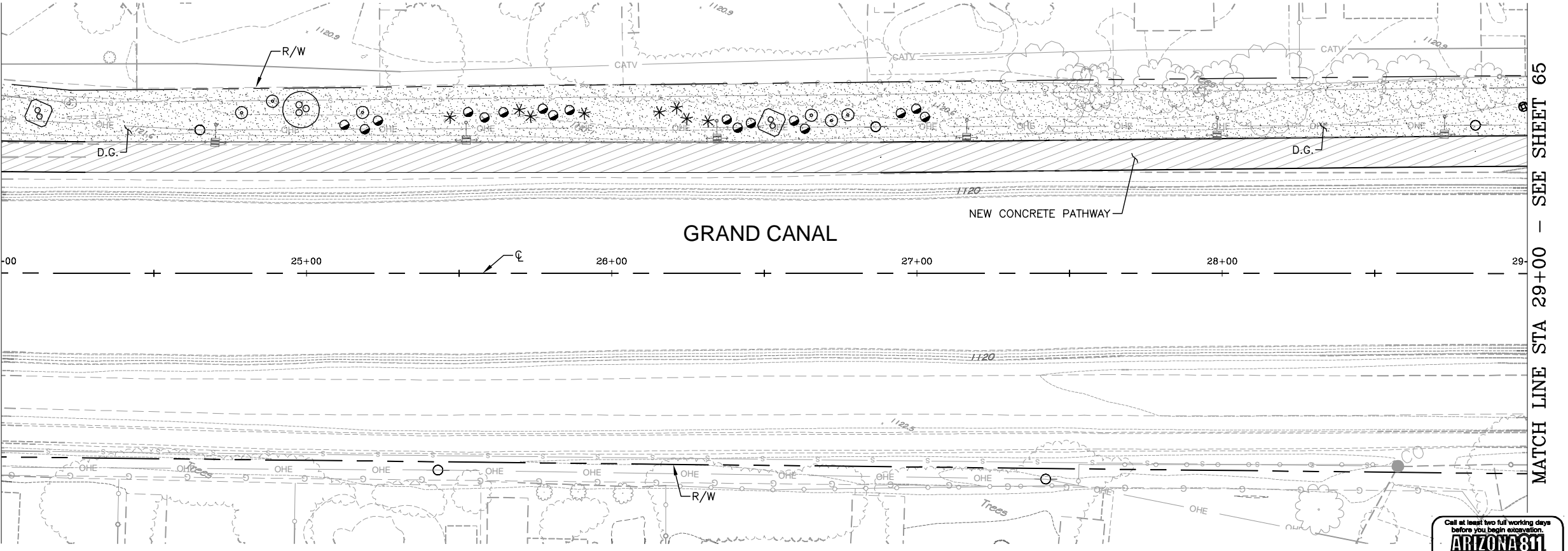
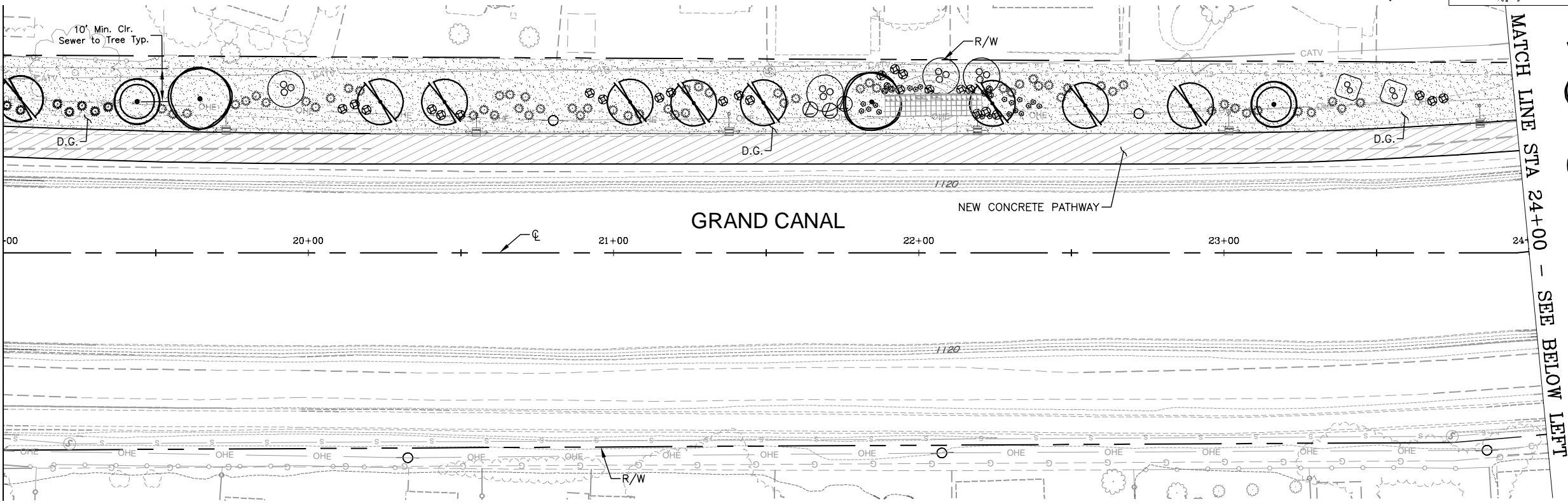
NO.	REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CKD BY	DATE

NO.	REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CKD BY	DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

MATCH LINE STA 19+00 - SEE SHEET 63

MATCH LINE STA 24+00 - SEE ABOVE RIGHT



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	64	153	

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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**PLANT LIST**  
For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Acacia aneura / Mulga Acacia	-
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	2
	Caesalpinia pulcherrima / Red Bird of Paradise	4
	Caesalpinia gilliesii / Yellow Bird of Paradise	2
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	9
	Sophora secundiflora /	2
<b>SHRUBS</b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	-
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora "perpa" / Brakelights® Red Yucca	-
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	67
	Yucca rupicola / Twisted Leaf Yucca	26
<b>GROUND COVER</b>		
	Baileya multiradiata / Desert Marigold	19
	Lantana montevidensis Yellow Trailing Lantana	3
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	6
	Zauschneria californica / California Fuchsia	-

**PLANT LIST - Additional**  
Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Prosopis hybrid Phoenix / Mesquite	-
	Parkinsonia microphyllum / Foothill Palo Verde	-
<b>SHRUBS</b>		
	Calliandra californica / Baja Fairy Duster	-
	Eremophila hygrophana / Blue Bells	-
	Eremophila maculata / Valentine	-
	Asclepias subulata / Desert Milkweed	-
	Hesperaloe funifera / Giant Hesperaloe	-
	Existing Trees & Shrubs	-
	Decomposed Granite, McKenna Gold 1/2" Screened	95.9 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.  
\*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.\*

<b>LANDSCAPE PLAN</b>				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	64	153
SCALE: 1" = 20' HORIZONTAL				



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Joel Hornam

TY Lin Half Scale.ctb

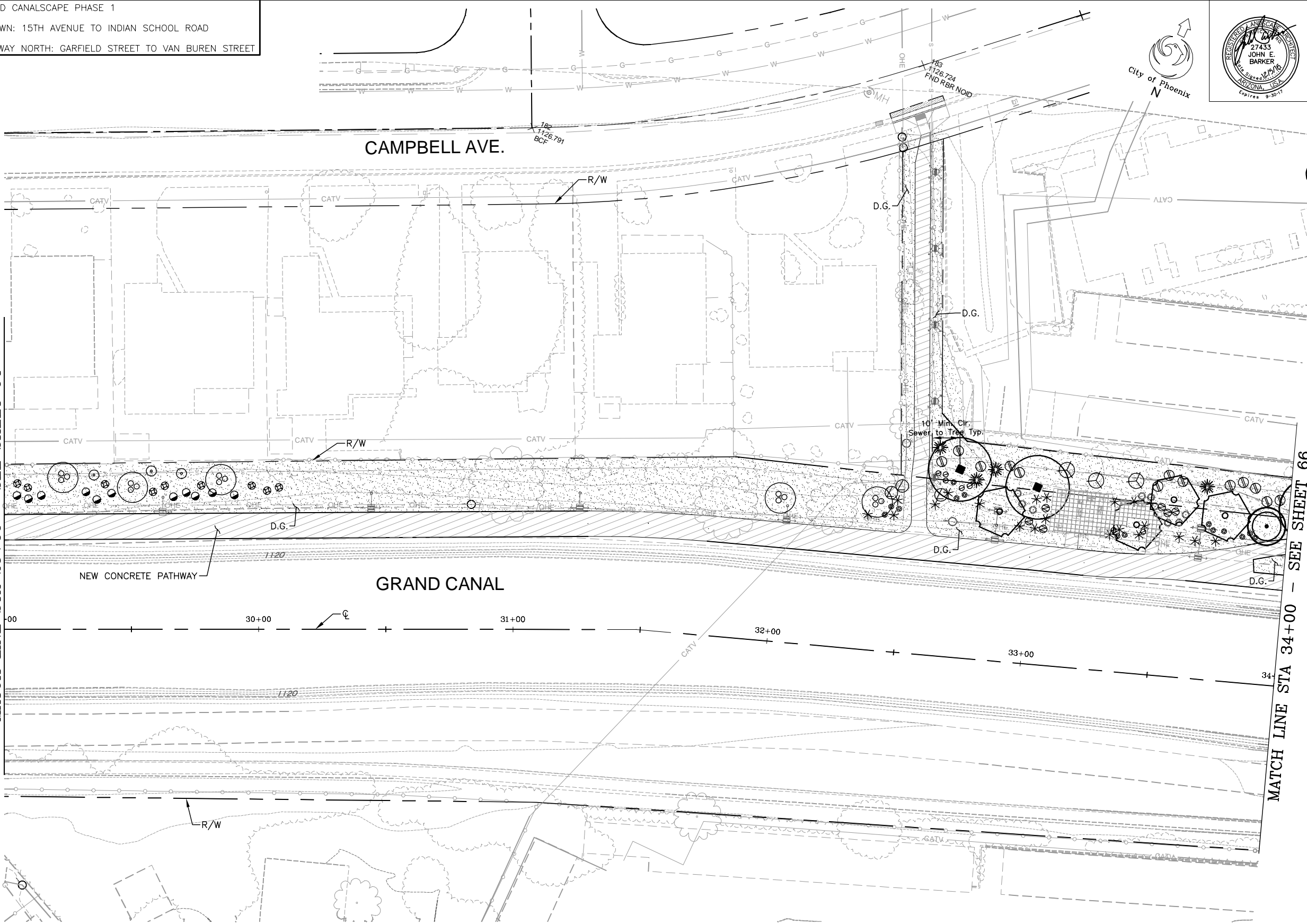
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

MATCH LINE STA 29+00 - SEE SHEET 64



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	65	153	

27435

JOHN E. BARKER

Arizona Seal of Office

Expires: 9-30-17

City of Phoenix

DES: JEB/JDH

DR: AJA/JDH

CK: JEB

DATE: 12/16

PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Acacia aneura / Mulga Acacia	4
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	-
	Caesalpinia pulcherrima / Red Bird of Paradise	5
	Caesalpinia gilliesii / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	-
	Sophora secundiflora /	1
<b>SHRUBS</b>		
	Chrysactinia mexicana / Daminiata	11
	Encelia farinosa / Brittlebush	3
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights® Red Yucca	20
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	9
	Yucca rupicola / Twisted Leaf Yucca	9
<b>GROUNDCOVER</b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	3
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	7
	Psilostrophe cooperi / Paper Flower	14
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	6

PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Prosopis hybrid Phoenix / Mesquite	-
	Parkinsonia microphyllum / Foothill Palo Verde	2
<b>SHRUBS</b>		
	Calliandra californica / Baja Fairy Duster	3
	Eremophila hygrophana / Blue Bells	13
	Eremophila maculata / Valentine	-
	Asclepias subulata / Desert Milkweed	4
	Hesperaloe funifera / Giant Hesperaloe	-
	Existing Trees & Shrubs	-
	Decomposed Granite, McKenna Gold 1/2" Screened	63.3 C.Y.

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LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			65	153

Call at least two full working days before you begin excavation.

ARIZONA 811

Arizona Blue Stake, Inc.

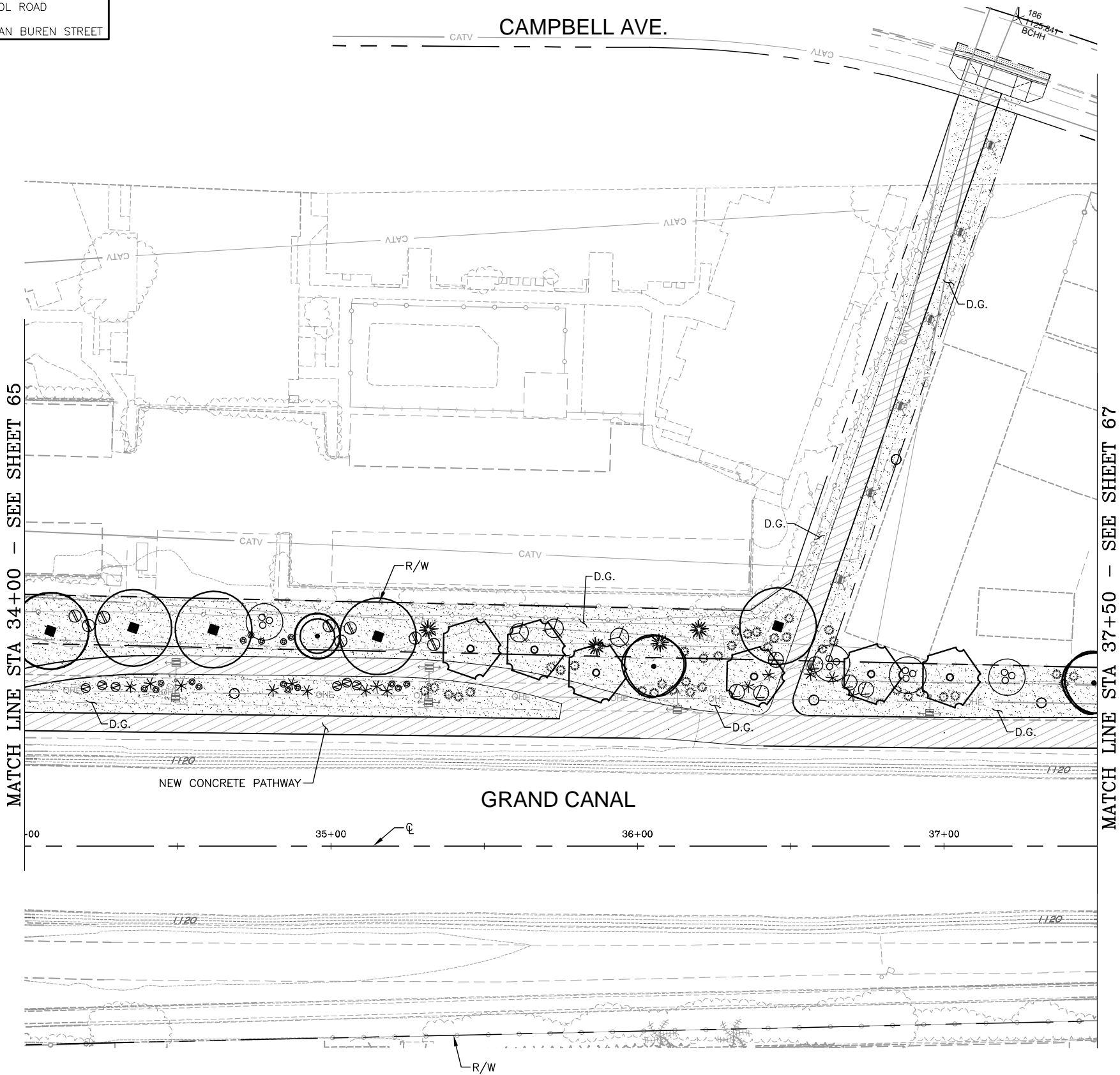
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)

In Maricopa County: (602) 263-1100

ST87600074 - 12/5/16



GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	66	153	.

**Gavan & Barker Inc.** Civil Engineering - Landscape Architecture  
3030 North Central Avenue, Suite 1530, Phoenix  
Arizona 85012 Ph: 602-200-0031 Fx: 602-200-0032

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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
## PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/Common NAME:	QTY
<b><u>TREES</u></b>		
	Acacia aneura / Mulga Acacia	6
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	2
	Caesalpinia pulcherrima / Red Bird of Paradise	4
	Caesalpinia gilliesi / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	-
	Sophora secundiflora /	1
<b><u>SHRUBS</u></b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	-
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights ® Red Yucca	14
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	40
	Yucca rupicola / Twisted Leaf Yucca	-
<b><u>GROUND COVER</u></b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	6
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	16
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	6

## PLANT LIST - Additional

Plants for landscape areas outside of SRP  
right-of-way only.

SYMBOL	BOTANICAL/Common Name:	QTY
	<b><u>TREES</u></b> Prosopis hybrid Phoenix / Mesquite Parkinsonia microphyllum / Foothill Palo Verde	- 5
	<b><u>SHRUBS</u></b> Calliandra californica / Baja Fairy Duster Eremophila hygrophana / Blue Bells Eremophila maculata / Valentine Asclepias subulata / Desert Milkweed Hesperaloe funifera / Giant Hesperaloe	3 8 - - 4
	Existing Trees & Shrubs	
	Decomposed Granite, McKenna Gold 1/2" Screened	54.6 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND  
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UTILITIES WITHIN THE PROJECT LIMITS.

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# LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			66	153

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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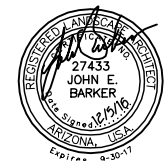
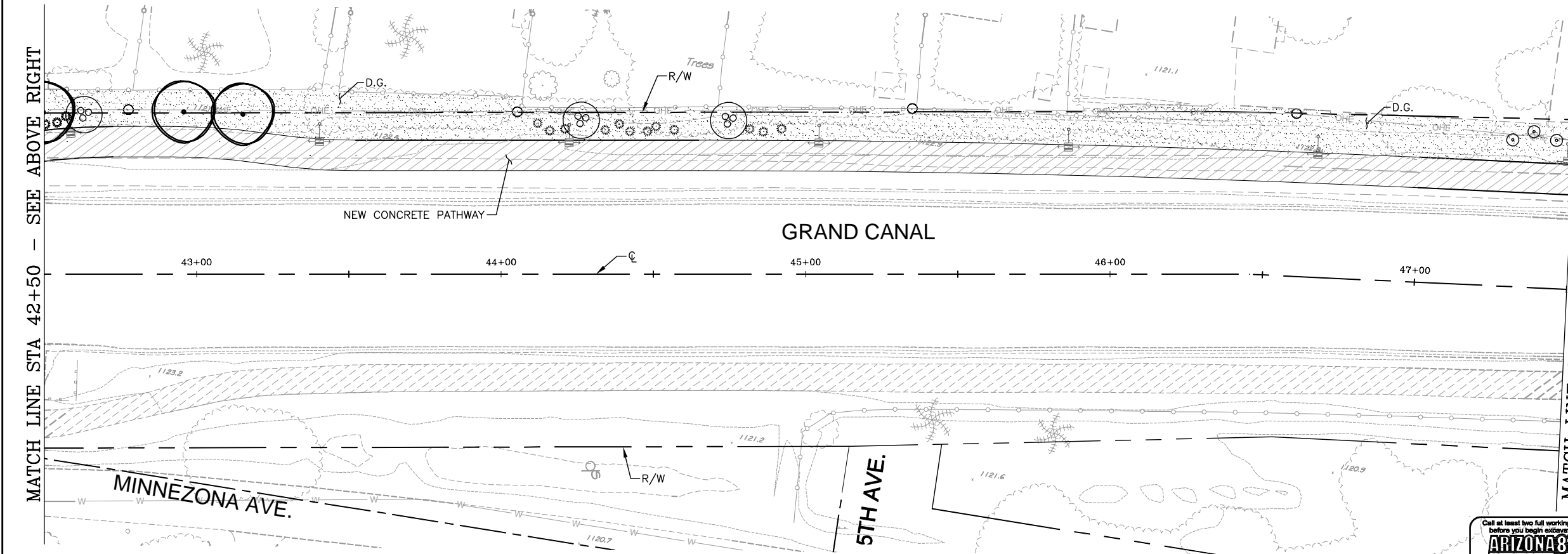
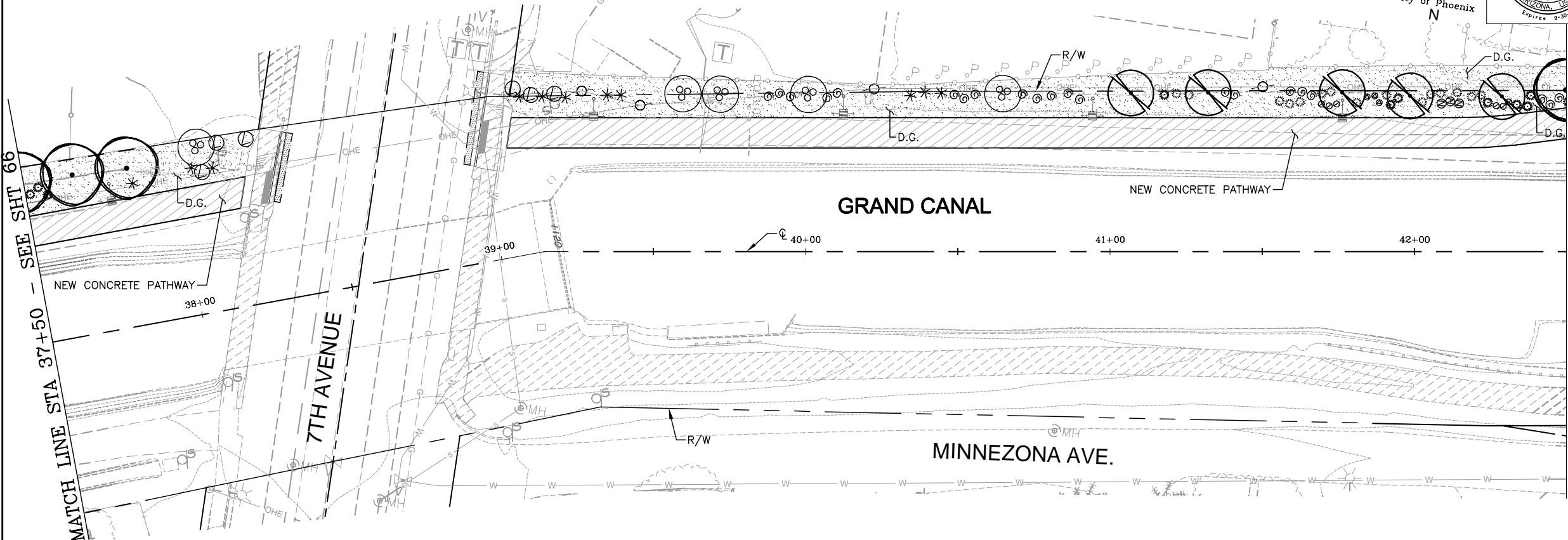
Joel Hornum

NO.	DESCRIPTION	REV BY	CKD BY	DATE

NO.	DESCRIPTION	REV BY	CKD BY	DATE

NO.	DESCRIPTION	REV BY	CKD BY	DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	67	153	

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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### PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Acacia aneura / Mulga Acacia	-
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	5
	Caesalpinia pulcherrima / Red Bird of Paradise	8
	Caesalpinia gilliesii / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	5
	Sophora secundiflora /	-
<b>SHRUBS</b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	3
	Euphorbia rigida / Gopher Plant	21
	Hesperaloe parviflora 'perpa' / Brakelights® Red Yucca	11
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	39
	Yucca rupicola / Twisted Leaf Yucca	-
<b>GROUNDCOVER</b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	6
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	6
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	4
	Zauschneria californica / California Fuchsia	3

### PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Prosopis hybrid Phoenix / Mesquite	-
	Parkinsonia microphyllum / Foothill Palo Verde	-
<b>SHRUBS</b>		
	Calliandra californica / Baja Fairy Duster	-
	Eremophila hygrophana / Blue Bells	-
	Eremophila maculata / Valentine	-
	Asclepias subulata / Desert Milkweed	-
	Hesperaloe funifera / Giant Hesperaloe	-
	Existing Trees & Shrubs	-
	Decomposed Granite, McKenna Gold 1/2" Screened	50.2 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

\*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.\*

## LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	67	153

SCALE: 1" = 20' HORIZONTAL



ST87600074, 12/5/16

TY Lin Half Scale.ctb

Joel Hornam

12/5/2016 5:12:21 PM

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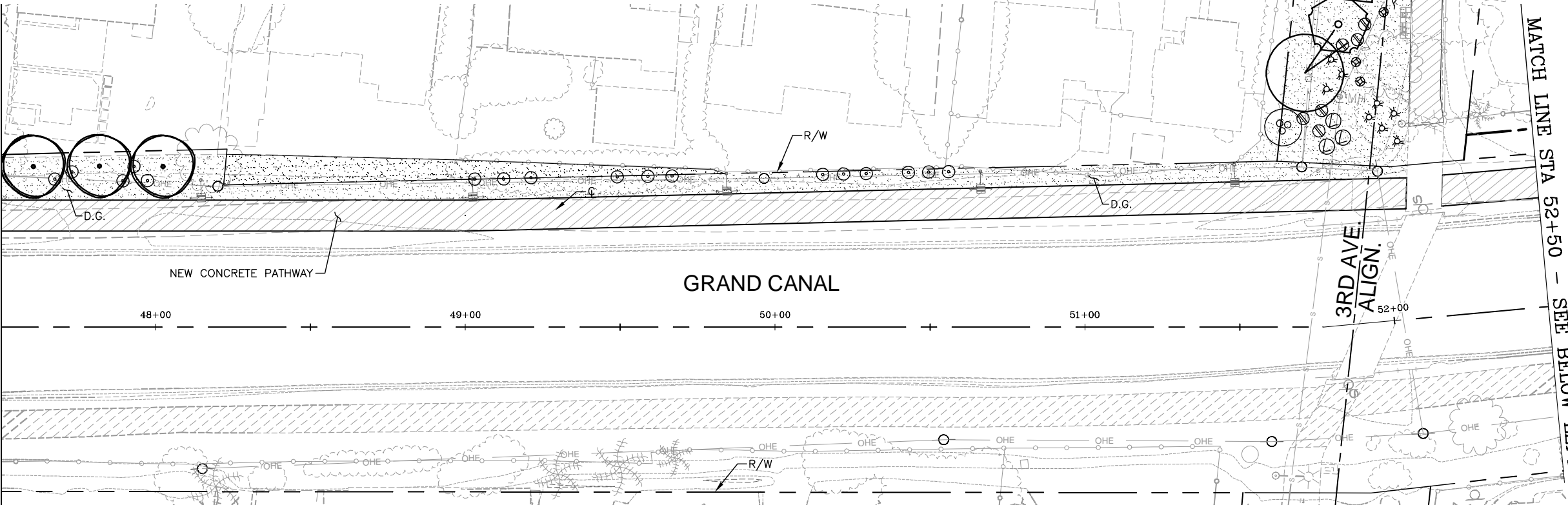
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

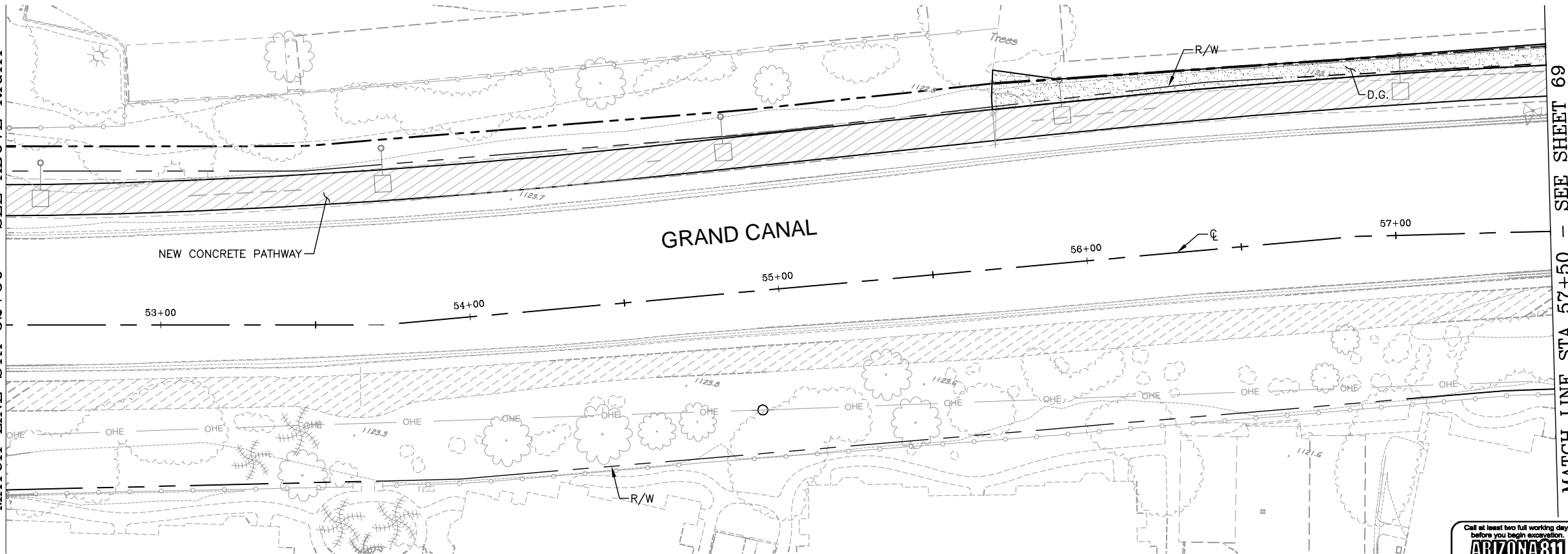
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

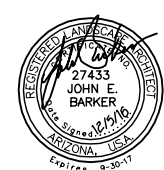
MATCH LINE STA 47+50 - SEE SHEET 67



MATCH LINE STA 52+50 - SEE ABOVE RIGHT



HAZELWOOD STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	68	153	

Gavan Barker  
Civil Engineering - Landscape Architecture  
27433 JOHN E. BARKER  
Arizona State License No. 27433  
Expires 9-30-17

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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### PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Acacia aneura / Mulga Acacia	2
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	3
	Caesalpinia pulcherrima / Red Bird of Paradise	1
	Caesalpinia gilliesi / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	1
	Fraxinus greggii / Little Leaf Ash	-
	Sophora secundiflora /	-
<b>SHRUBS</b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	17
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights® Red Yucca	-
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	-
	Yucca rupicola / Twisted Leaf Yucca	6
<b>GROUNDCOVER</b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	6
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	-

### PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Prosopis hybrid Phoenix / Mesquite	-
	Parkinsonia microphyllum / Foothill Palo Verde	-
<b>SHRUBS</b>		
	Calliandra californica / Baja Fairy Duster	-
	Eremophila hygrophana / Blue Bells	9
	Eremophila maculata / Valentine	-
	Asclepias subulata / Desert Milkweed	9
	Hesperaloe funifera / Giant Hesperaloe	-
<b>Existing Trees &amp; Shrubs</b>		
	Decomposed Granite, McKenna Gold 1/2" Screened	41.3 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	68	153
SCALE: 1" = 20' HORIZONTAL				



ST87600074, 12/5/16

S:\Projects\2015\1503 TYLIN - Grand Canalscape\CoalSheets\ST87600074-LS.dwg

12/5/2016 5:12:51 PM

Joel Hornam

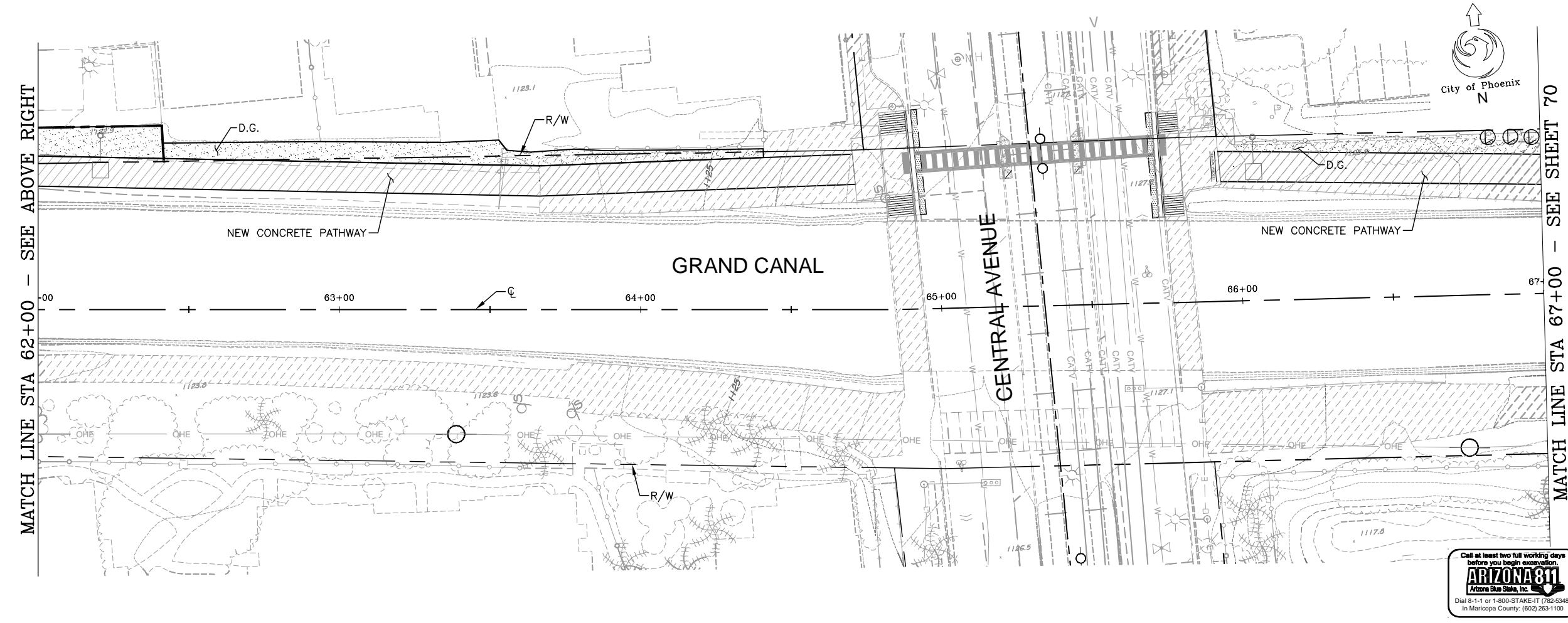
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


























NO.	DESCRIPTION	REV BY	CKD BY	DATE

NO.	DESCRIPTION	REV BY	CKD BY	DATE

NO.	DESCRIPTION	REV BY	CKD BY	DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	69	153	
<div><div></div><div>Civil Engineering - Landscape Architecture 2020 North Central Avenue, Suite 1100, Phoenix Arizona 85012 Ph: 602-263-0071 Fx: 602-263-0072</div></div>					
DES: JEB/JDH		DR: AJA/JDH	CK: JEB	DATE: 12/16	
PLANT LIST					
For landscape areas within SRP right-of-way.					
SYMBOL	BOTANICAL/COMMON NAME:			QTY	
TREES					
	Acacia aneura / Mulga Acacia			-	
	Acacia smallii / Sweet Acacia			-	
	Caesalpinia cacalaco Smoothie/ Thornless Cascadote			-	
	Caesalpinia pulcherrima / Red Bird of Paradise			-	
	Caesalpinia gilliesii / Yellow Bird of Paradise			-	
	Chilosis linearis / Desert Willow			-	
	Fraxinus greggii / Little Leaf Ash			-	
	Sophora secundiflora /			-	
SHRUBS					
	Chrysactinia mexicana / Daminiata			-	
	Encelia farinosa / Brittlebush			-	
	Euphorbia rigida / Gopher Plant			-	
	Hesperaloe parviflora 'perpa' / Brakelights® Red Yucca			-	
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass			-	
	Yucca rupicola / Twisted Leaf Yucca			-	
GROUNDCOVER					
	Baileya multiradiata / Desert Marigold			-	
	Lantana montevidensis Yellow Trailing Lantana			3	
	Macfadyena unguis-cati / Cat's Claw Vine			-	
	Melampodium leucanthum / Blackfoot Daisy			-	
	Psilostrophe cooperi / Paper Flower			-	
	Bulbine frutescens / Tiny Tangerine			-	
	Zauschneria californica / California Fuchsia			-	
PLANT LIST - Additional					
Plants for landscape areas outside of SRP right-of-way only.					
SYMBOL	BOTANICAL/COMMON NAME:			QTY	
TREES					
	Prosopis hybrid Phoenix / Mesquite			-	
	Parkinsonia microphyllum / Foothill Palo Verde			-	
SHRUBS					
	Calliandra californica / Baja Fairy Duster			-	
	Eremophila hygrophana / Blue Bells			-	
	Eremophila maculata / Valentine			-	
	Asclepias subulata / Desert Milkweed			-	
	Hesperaloe funifera / Giant Hesperaloe			-	
	Existing Trees & Shrubs			-	
	Decomposed Granite, McKenna Gold 1/2" Screened			24.0 C.Y.	
CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.					
*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.*					
LANDSCAPE PLAN					
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT					
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074					
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL	
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS	
SCALE: 1" = 20' HORIZONTAL			69	153	

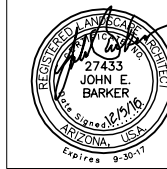
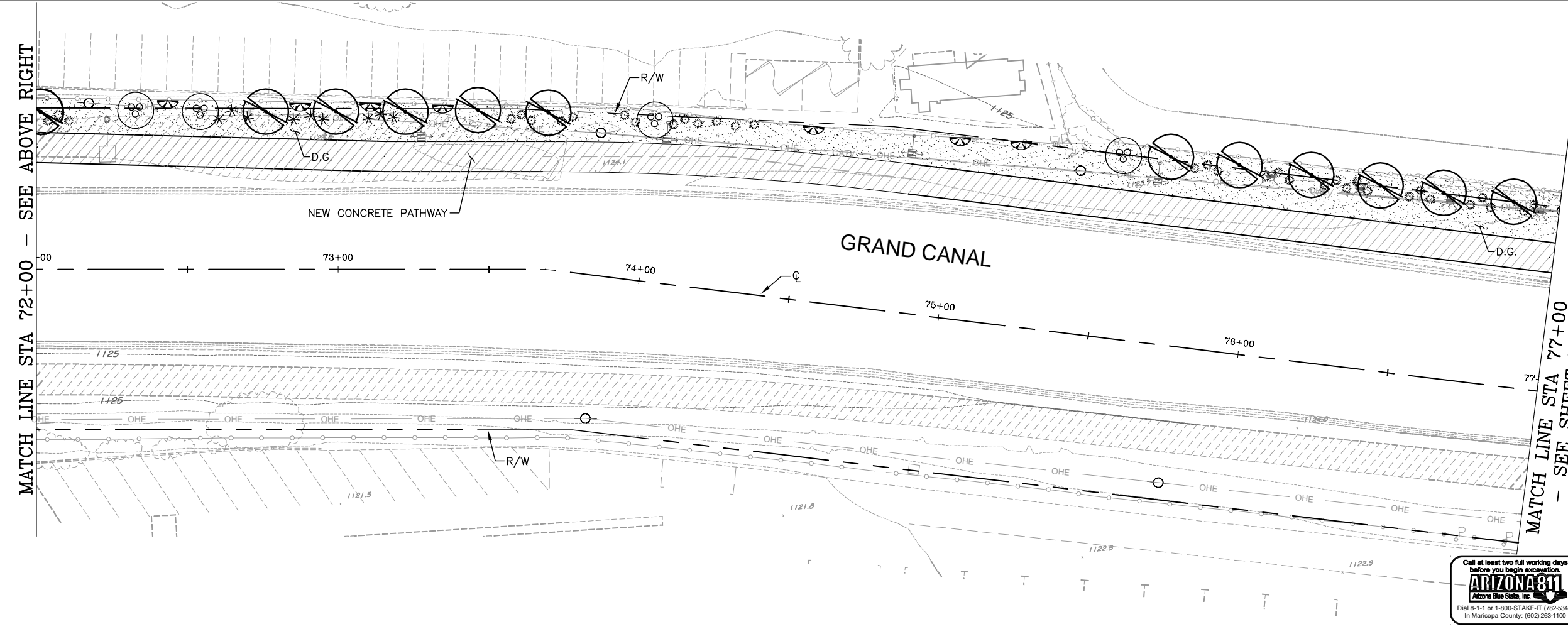
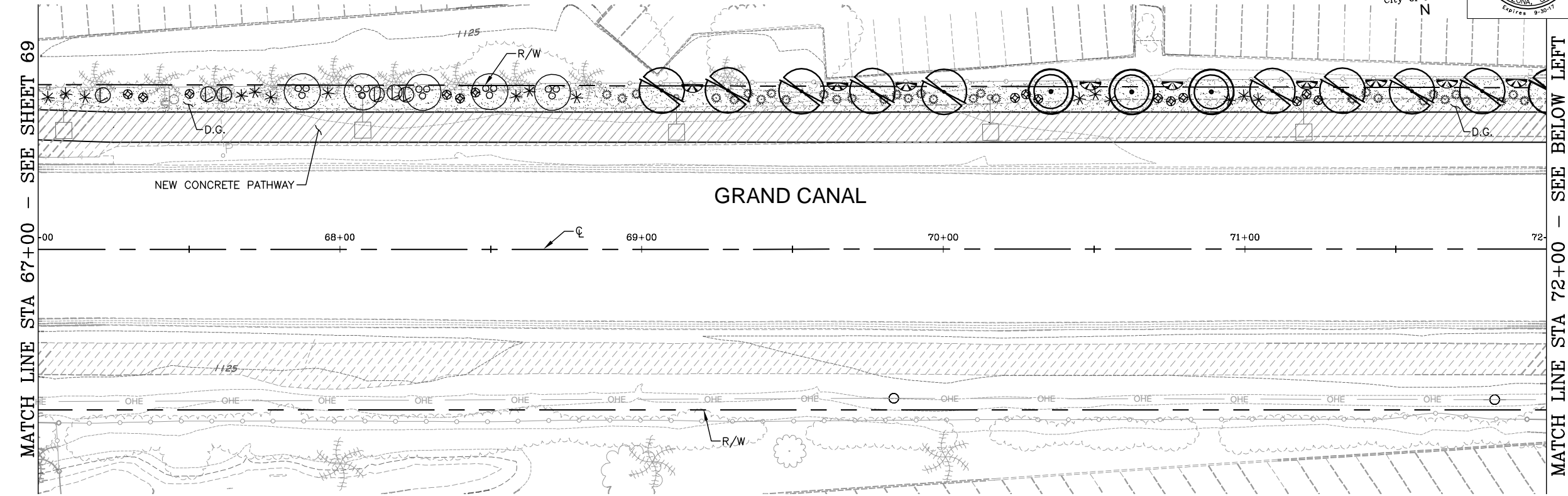
ST87600074, 12/5/16



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GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	70	153	.

 <b>Civil Engineering - Landscape Architecture</b> 3030 North Central Avenue, Suite 1530, Phoenix Arizona 85012 Ph: 602-263-0031 Fax: 602-260-0032			
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16





## PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b><u>TREES</u></b>		
	Acacia aneura / Mulga Acacia	-
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	-
	Caesalpinia pulcherrima / Red Bird of Paradise	9
	Caesalpinia gilliesii / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	-
	Traxinus greggii / Little Leaf Ash	21
	Sophora secundiflora /	3
<b><u>SHRUBS</u></b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	-
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights ® Red Yucca	25
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	66
	Yucca rupicola / Twisted Leaf Yucca	15
<b><u>GROUNDCOVER</u></b>		
	Bailey multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	6
	Macfadyena unguis-cati / Cat's Claw Vine	16
	Metapodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	-

## PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/Common NAME:	QTY
	<b><u>TREES</u></b> Prosopis hybrid Phoenix / Mesquite Parkinsonia microphyllum / Foothill Palo Verde	- - -
	<b><u>SHRUBS</u></b> Calliandra californica / Baja Fairy Duster Eremophila hygrophana / Blue Bells Eremophila maculata / Valentine Asclepias subulata / Desert Milkweed Hesperaloe funifera / Giant Hesperaloe	- - - - -
	Existing Trees & Shrubs	
	Decomposed Granite, McKenna Gold 1/2" Screened	53.0 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

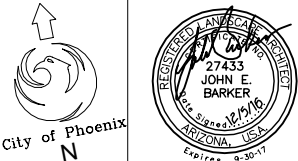
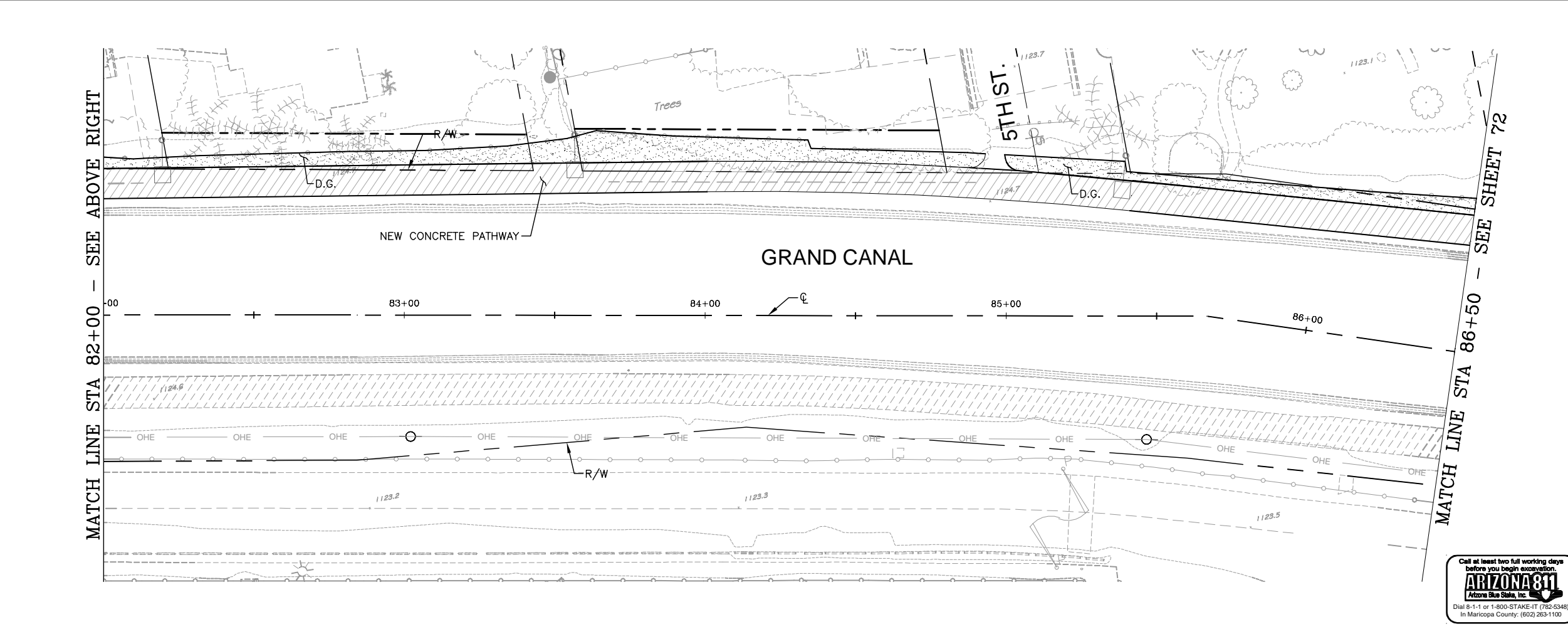
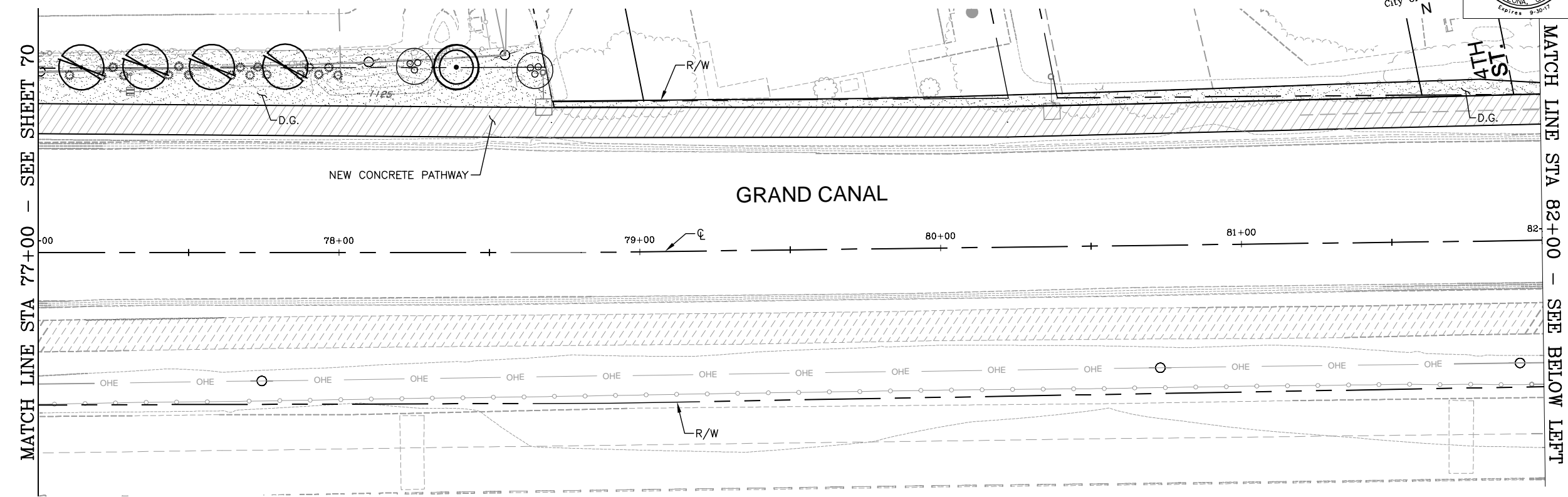
"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

LANDSCAPE PLAN				
CITY OF PHOENIX, ARIZONA				
STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1				
UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			70	153

ST87600074, 12/5/16

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	71	153	.

		<b>Civil Engineering - Landscape Architecture</b> 3030 North Central Avenue, Suite 1530, Phoenix Arizona 85012 P: 602-300-0031 F: 602-300-0032	
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16


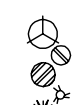


## PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/Common NAME:	QTY
<b><u>TREES</u></b>		
	Acacia aneura / Mulga Acacia	-
	Acacia smallii / Sweet Acacia	-
	Caesalpinia calacalo Smoothie/ Thornless Cascalote	-
	Caesalpinia pulcherrima / Red Bird of Paradise	2
	Caesalpinia gilliesii / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	4
	Sophora secundiflora /	1
<b><u>SHRUBS</u></b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	-
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights ® Red Yucca	-
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	17
	Yucca rupicola / Twisted Leaf Yucca	-
<b><u>GROUND COVER</u></b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis / Yellow Trailing Lantana	-
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	-

## PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/Common Name:	QTY
	<p><b><u>TREES</u></b></p> <p>Prosopis hybrid Phoenix / Mesquite -</p> <p>Parkinsonia microphyllum / Foothill Palo Verde -</p>	
	<p><b><u>SHRUBS</u></b></p> <p>Calliandra canforica / Baja Fairy Duster -</p> <p>Eremophila hygrophana / Blue Bells -</p> <p>Eremophila maculata / Valentine -</p> <p>Asclepias subulata / Desert Milkweed -</p> <p>Hesperaloe funifera / Giant Hesperaloe -</p>	
	<p>Existing Trees &amp; Shrubs</p>	
	<p>Decomposed Granite, McKenna Gold 1/2" Screened</p>	31.2 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND  
VERIFYING ELEVATIONS FOR ALL UNDERGROUND  
UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

# LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			71	153

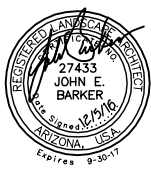
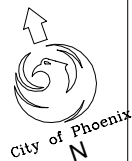
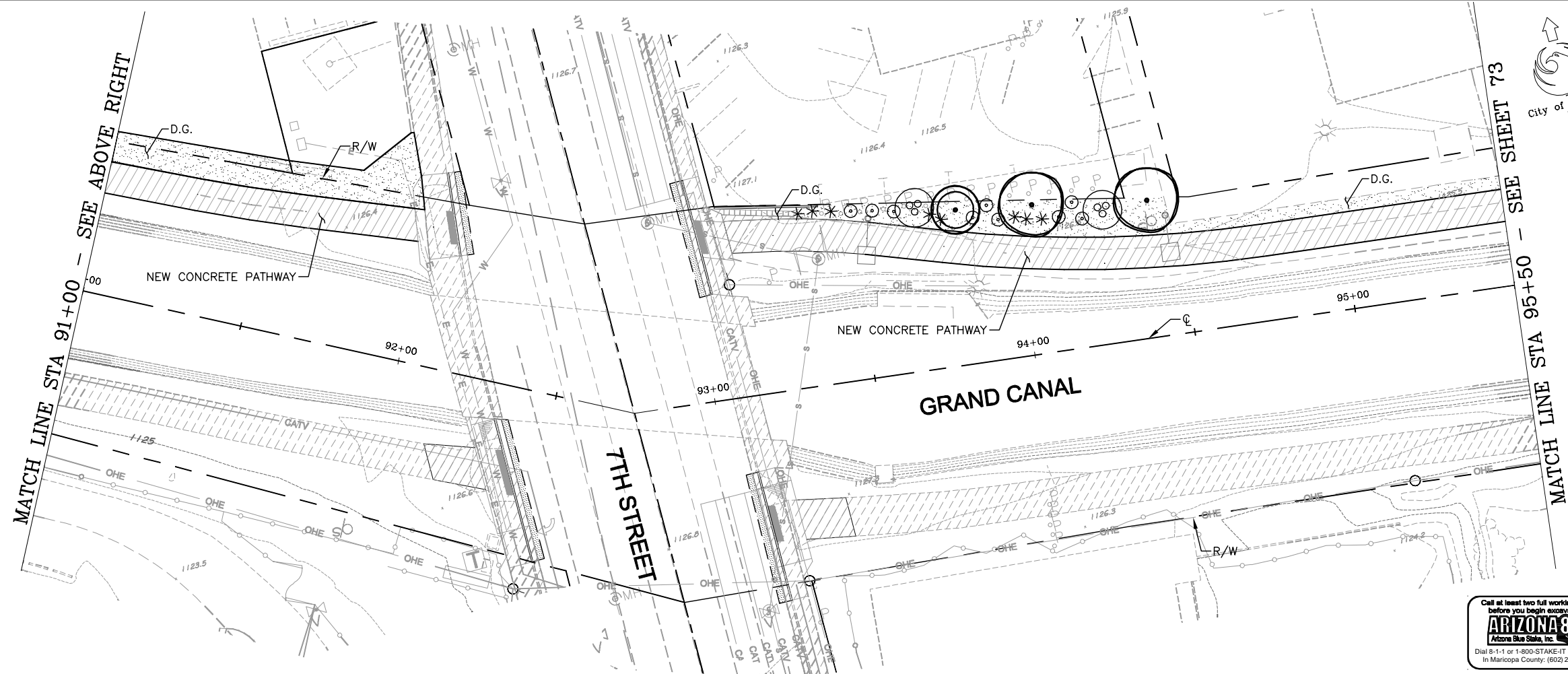
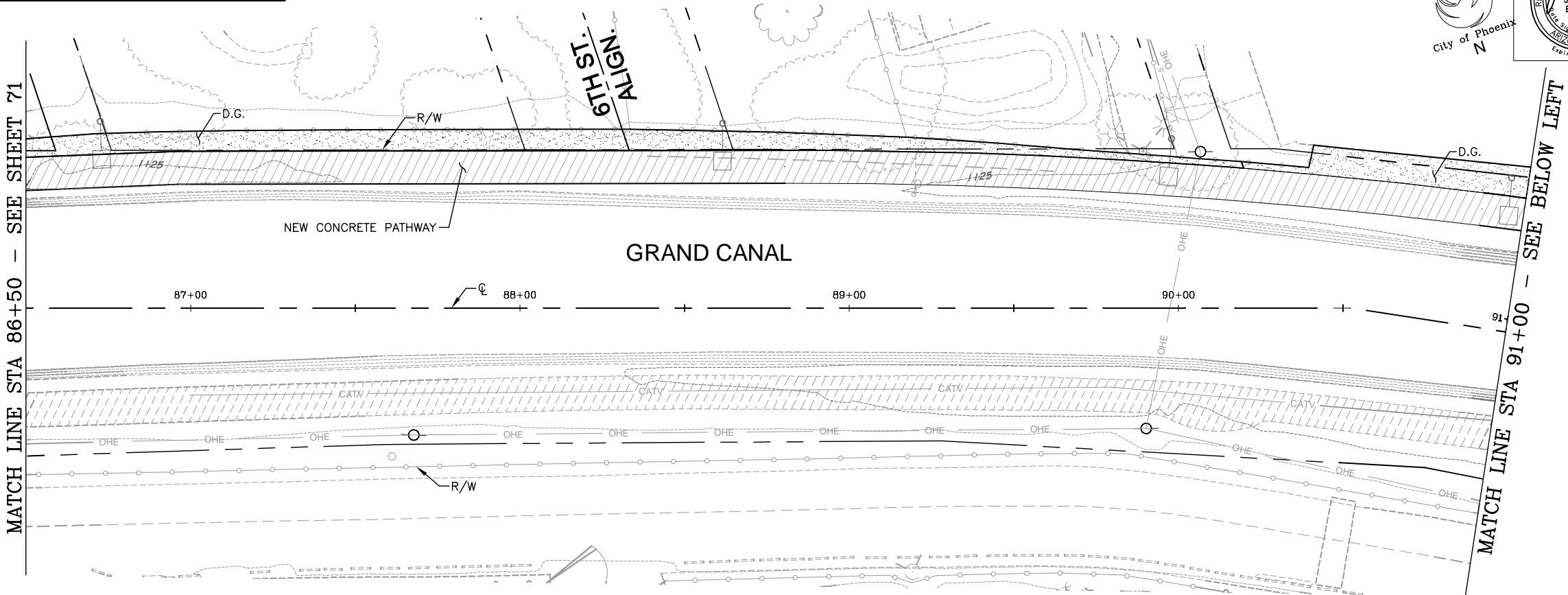
Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	72	153	.

**Gavan & Barker** INC. **Civil Engineering - Landscape Architecture**  
3030 North Central Avenue, Suite 1530, Phoenix  
Arizona 85012 Ph: 602-200-0031 Fx: 602-200-0032

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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
## PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b><u>TREES</u></b>		
	Acacia aneura / Mulga Acacia	-
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	-
	Caesalpinia pulcherrima / Red Bird of Paradise	2
	Caesalpinia gilliesii / Yellow Bird of Paradise	-
	Chilopsis linearis / Desert Willow	-
	Gracilaria greggii / Little Leaf Ash	4
	Sophora secundiflora /	1
<b><u>SHRUBS</u></b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	-
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights ® Red Yucca	-
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	17
	Yucca rupicola / Twisted Leaf Yucca	-
<b><u>GROUND COVER</u></b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	-
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	-

### PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/Common Name:	QTY
	<b><u>TREES</u></b> Prosopis hybrid Phoenix / Mesquite Parkinsonia monophyllum / Foothill Palo Verde	- - -
	<b><u>SHRUBS</u></b> Calliandra californica / Baja Fairy Duster Eremophila hygrophana / Blue Bells Eremophila maculata / Valentine Asclepias subulata / Desert Milkweed Hesperaloe funifera / Giant Hesperaloe	- - - - -
	Existing Trees & Shrubs	
	Decomposed Granite, McKenna Gold 1/2" Screened	24.2 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

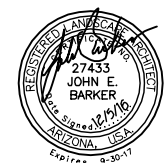
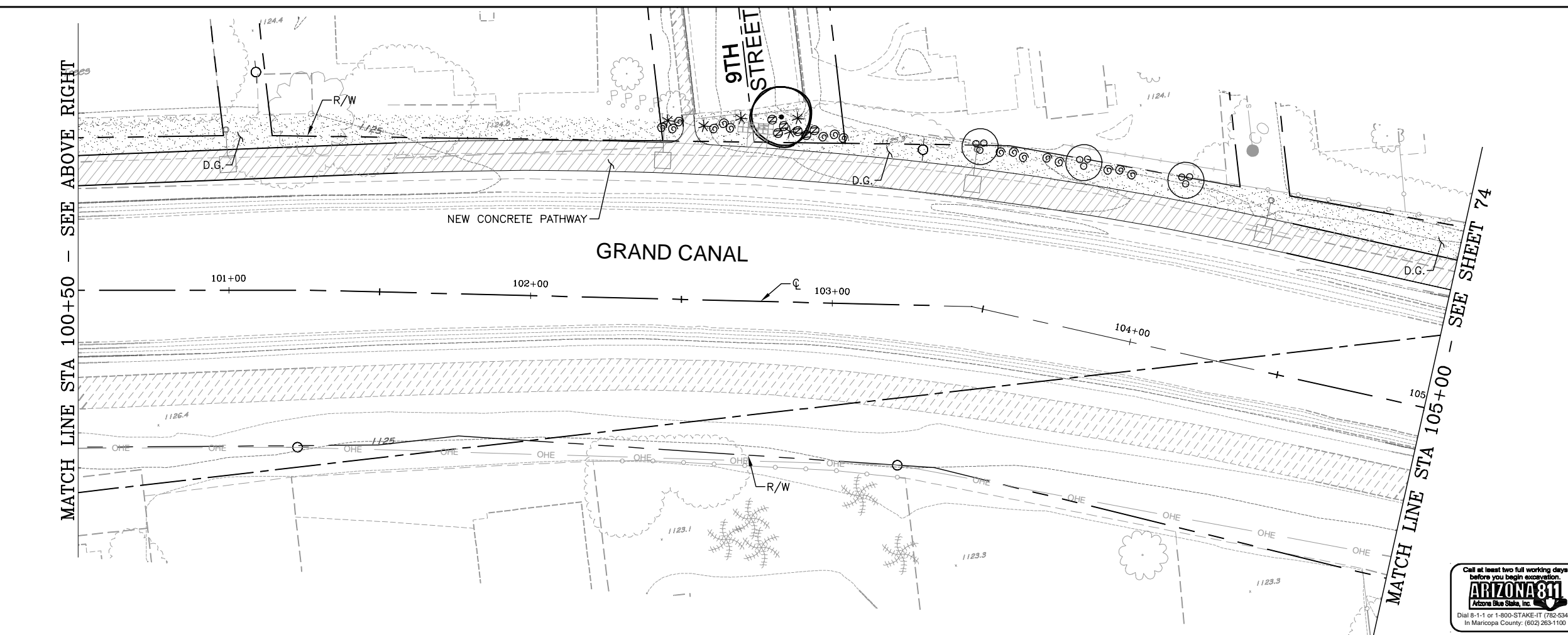
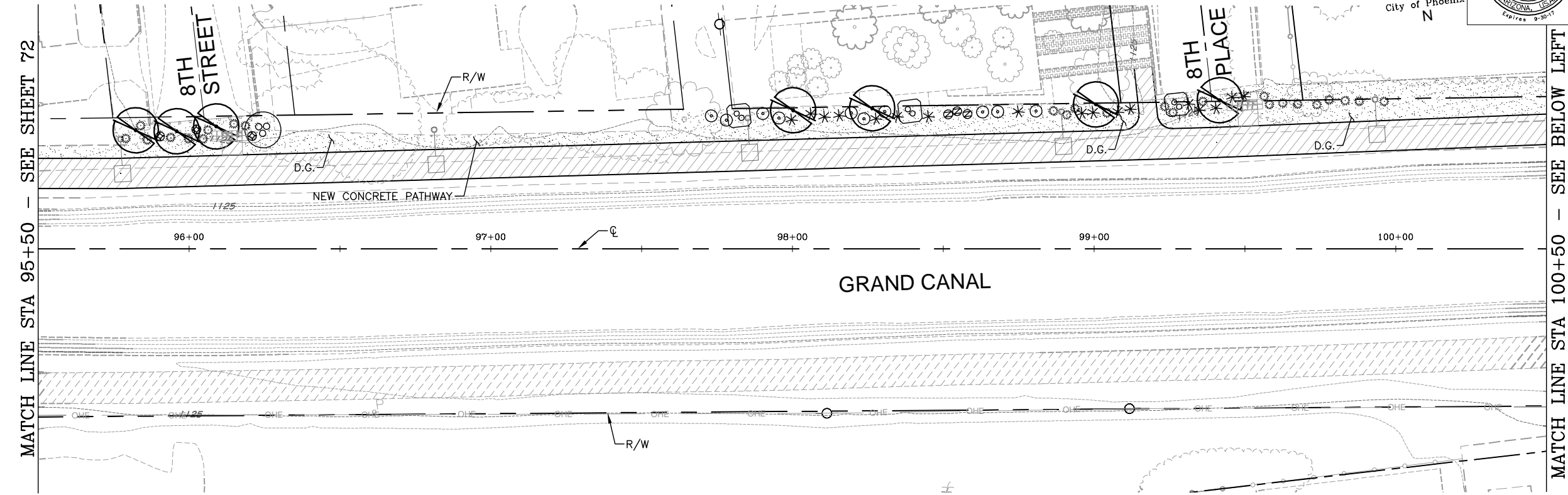
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16		
SCALE: 1" = 20' HORIZONTAL			72	153





[illegible]

GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	73	153	.

**Gavan & Barker Inc.** Civil Engineering - Landscape Architecture  
3030 North Central Avenue, Suite 1530, Phoenix  
Arizona 85012 Ph: 602-200-0031 Fx: 602-200-0032

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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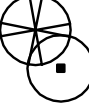



## PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/Common NAME	QTY
<b><u>TREES</u></b>		
	Acacia aneura / Mulga Acacia	-
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	1
	Caesalpinia pulcherrima / Red Bird of Paradise	4
	Caesalpinia gilliesii / Yellow Bird of Paradise	3
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	7
	Sophora secundiflora /	-
<b><u>SHRUBS</u></b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	10
	Euphorbia rigida / Gopher Plant	17
	Hesperaloe parviflora 'perpa' / Brakelights ® Red Yucca	22
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	25
	Yucca rupicola / Twisted Leaf Yucca	3
<b><u>GROUND COVER</u></b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	-
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	9

## PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/Common Name:	QTY
	<p><b><u>TREES</u></b></p> <p>Prosopis hybrid Phoenix / Mesquite -</p> <p>Parkinsonia microphyllum / Foothill Palo Verde -</p>	
	<p><b><u>SHRUBS</u></b></p> <p>Calliandra canforica / Baja Fairy Duster -</p> <p>Eremophila hygrophana / Blue Bells -</p> <p>Eremophila maculata / Valentine -</p> <p>Asclepias subulata / Desert Milkweed -</p> <p>Hesperaloe funifera / Giant Hesperaloe -</p>	
	<p>Existing Trees &amp; Shrubs</p>	
	<p>Decomposed Granite, McKenna Gold 1/2" Screened</p>	41.5 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

# LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	73	153
SCALE: 1" = 20' HORIZONTAL				

Call at least two full working days  
before you begin excavation.

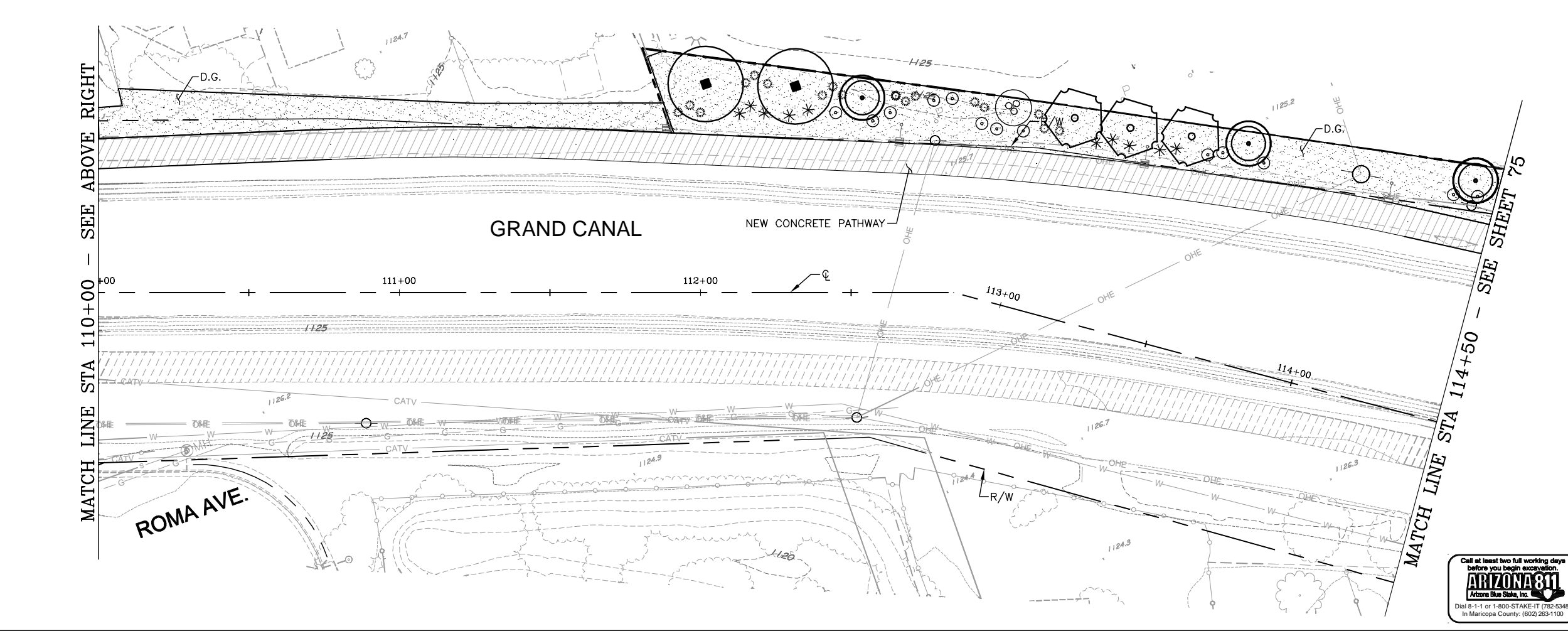
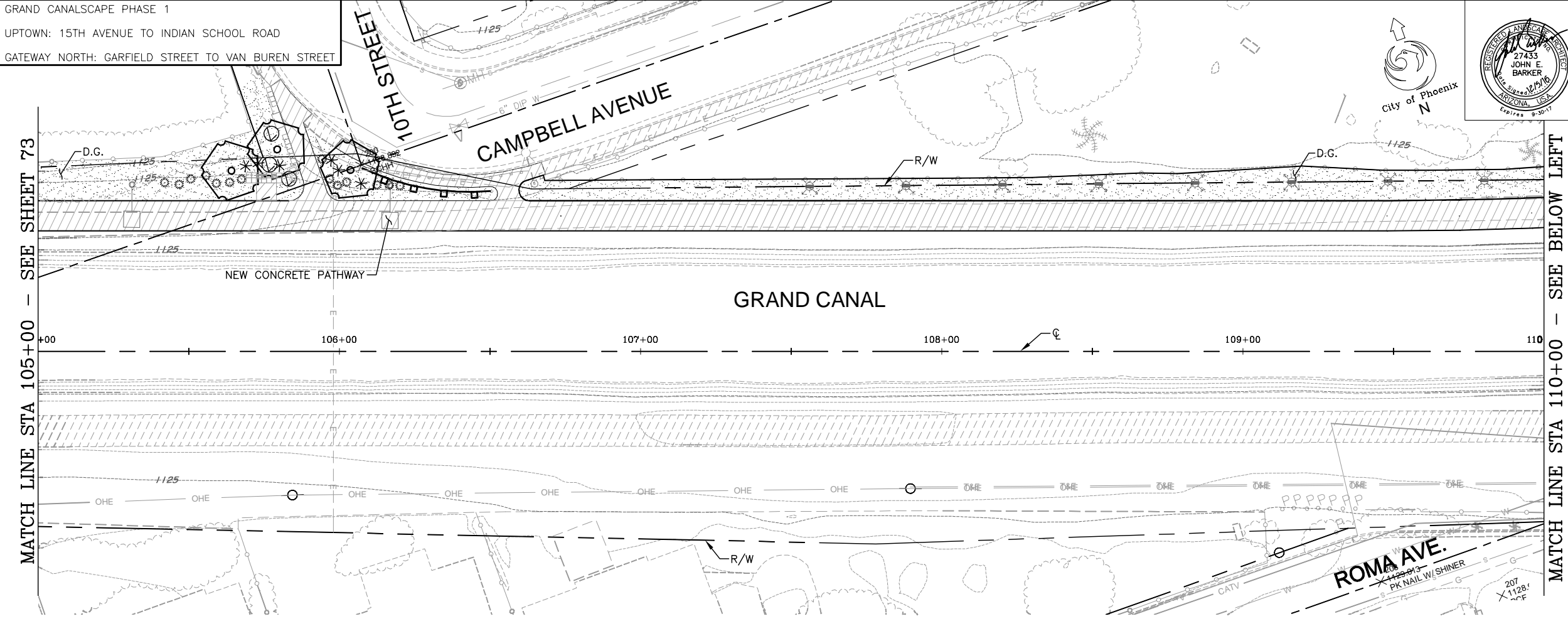
**ARIZONA 811**

Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX	
DESCRIPTION		DESCRIPTION		DESCRIPTION	
NO.	REV BY	NO.	REV BY	NO.	REV BY

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	74	153	

**Gavan Barker**  
Civil Engineering - Landscape Architecture  
2020 North Central Avenue, Suite 1100 Phoenix  
Arizona 85012 Ph: 602-263-0074 Fx: 602-263-0072  
27433 JOHN E. BARKER  
Professional Engineer  
Arizona License No. 27433  
Expires 9/30/17

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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### PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Acacia aneura / Mulga Acacia	6
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	-
	Caesalpinia pulcherrima / Red Bird of Paradise	1
	Caesalpinia gilliesi / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	-
	Sophora secundiflora /	3
<b>SHRUBS</b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	13
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights® Red Yucca	16
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	31
	Yucca rupicola / Twisted Leaf Yucca	-
<b>GROUNDCOVER</b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	3
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	-

### PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/COMMON NAME:	QTY
<b>TREES</b>		
	Prosopis hybrid Phoenix / Mesquite	-
	Parkinsonia microphyllum / Foothill Palo Verde	2
<b>SHRUBS</b>		
	Calliandra californica / Baja Fairy Duster	-
	Eremophila hygrophana / Blue Bells	-
	Eremophila maculata / Valentine	-
	Asclepias subulata / Desert Milkweed	-
	Hesperaloe funifera / Giant Hesperaloe	-
	Existing Trees & Shrubs	-
	Decomposed Granite, McKenna Gold 1/2" Screened	50.6 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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## LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

### GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	74	153

SCALE: 1" = 20' HORIZONTAL









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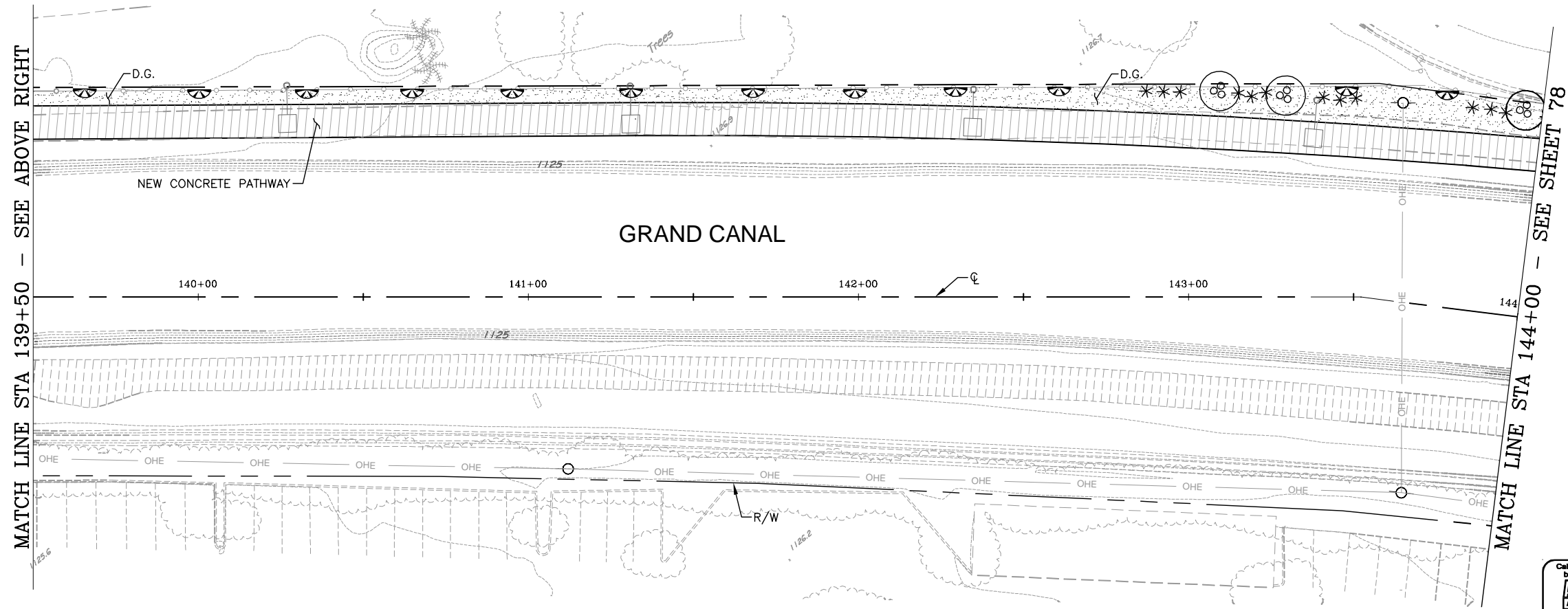
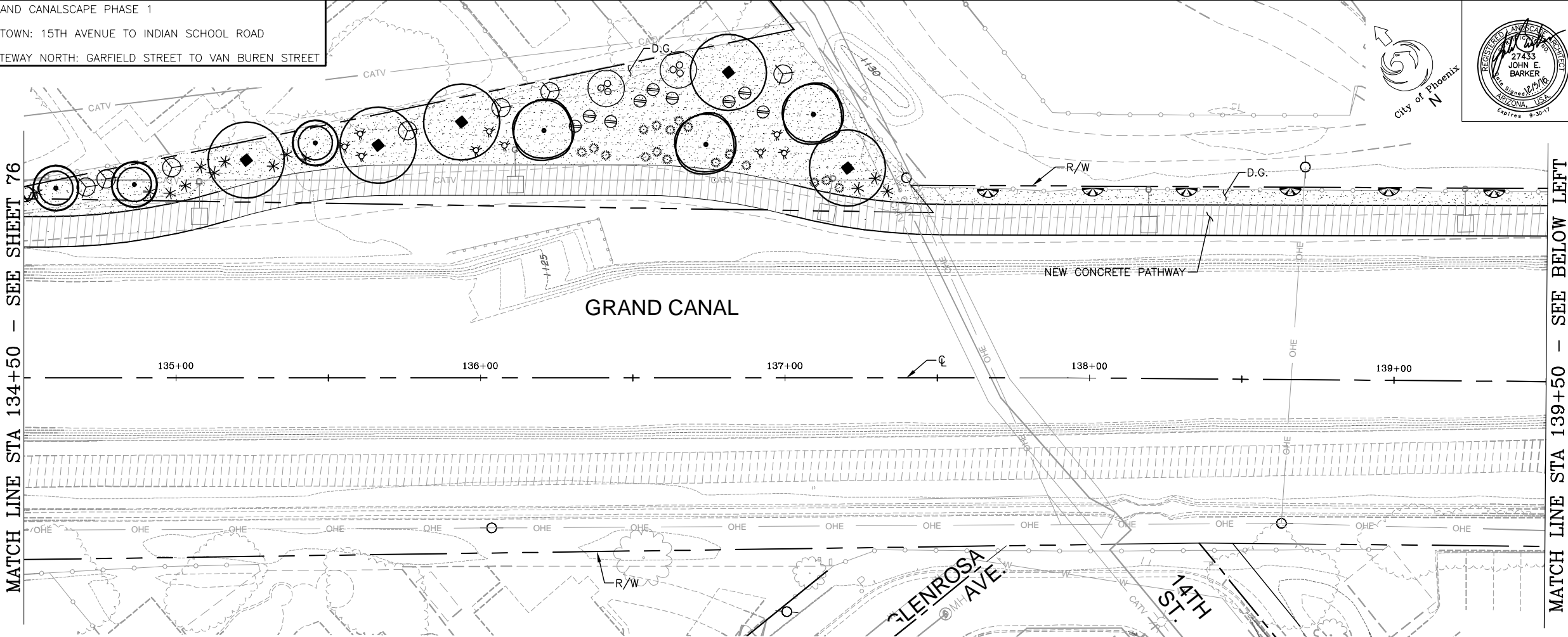
Joel Hormann
































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REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX	
DESCRIPTION		DESCRIPTION		DESCRIPTION	
NO.	REV BY CKD BY DATE	NO.	REV BY CKD BY DATE	NO.	REV BY CKD BY DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



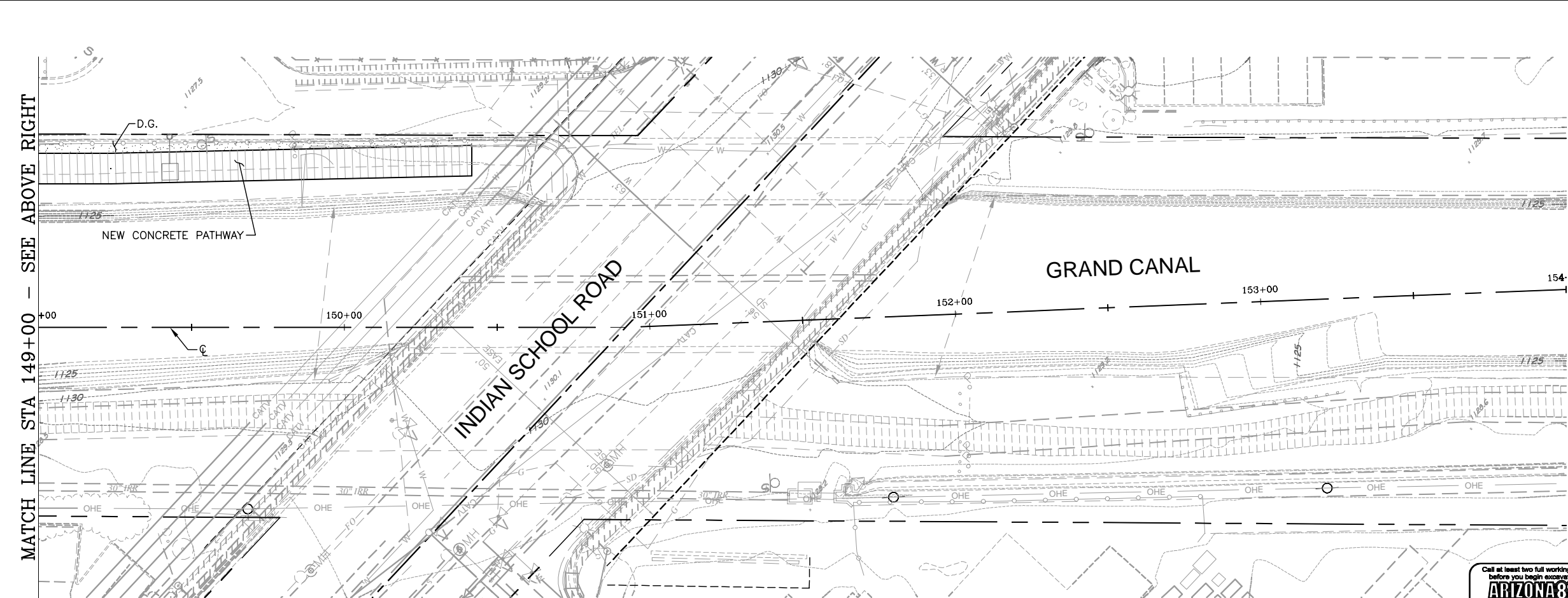
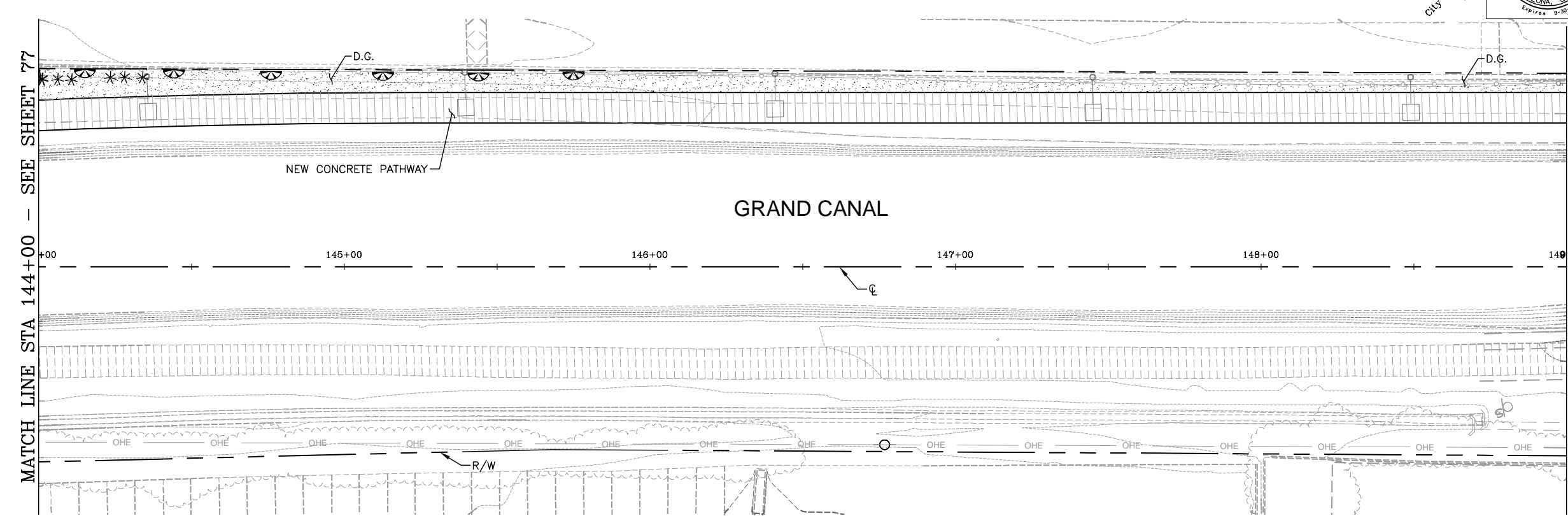
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	77	153	
<div><div><div>Civil Engineering - Landscape Architecture 2020 South Central Avenue, Suite 1120, Phoenix Arizona 85016 Ph: 602-248-0511 F: 602-248-0512</div></div></div>					
DES: JEB/JDH		DR: AJA/JDH		CK: JEB	DATE: 12/16
PLANT LIST					
For landscape areas within SRP right-of-way.					
SYMBOL	BOTANICAL/COMMON NAME:			QTY	
TREES					
	Acacia aneura / Mulga Acacia			-	
	Acacia smallii / Sweet Acacia			-	
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote			3	
	Caesalpinia pulcherrima / Red Bird of Paradise			5	
	Caesalpinia gilliesii / Yellow Bird of Paradise			-	
	Chilosis linearis / Desert Willow			-	
	Fraxinus greggii / Little Leaf Ash			-	
	Sophora secundiflora /			3	
SHRUBS					
	Chrysactinia mexicana / Daminiata			-	
	Encelia farinosa / Brittlebush			-	
	Euphorbia rigida / Gopher Plant			-	
	Hesperaloe parviflora 'perpa' / Brakelights® Red Yucca			25	
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass			17	
	Yucca rupicola / Twisted Leaf Yucca			-	
GROUNDCOVER					
	Baileya multiradiata / Desert Marigold			-	
	Lantana montevidensis Yellow Trailing Lantana			1	
	Macfadyena unguis-cati / Cat's Claw Vine			18	
	Melampodium leucanthum / Blackfoot Daisy			-	
	Psilostrophe cooperi / Paper Flower			-	
	Bulbine frutescens / Tiny Tangerine			-	
	Zauschneria californica / California Fuchsia			-	
PLANT LIST - Additional					
Plants for landscape areas outside of SRP right-of-way only.					
SYMBOL	BOTANICAL/COMMON NAME:			QTY	
TREES					
	Prosopis hybrid Phoenix / Mesquite			-	
	Parkinsonia microphyllum / Foothill Palo Verde			5	
SHRUBS					
	Calliandra californica / Baja Fairy Duster			7	
	Eremophila hygrophana / Blue Bells			9	
	Eremophila maculata / Valentine			-	
	Asclepias subulata / Desert Milkweed			9	
	Hesperaloe funifera / Giant Hesperaloe			-	
	Existing Trees & Shrubs				
	Decomposed Granite, McKenna Gold 1/2" Screened			52.1 C.Y.	
CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.					
*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.*					
LANDSCAPE PLAN					
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT					
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074					
DR: AJA/JDH		DES: JEB/JDH		CK: JEB	SHEET
DATE: 12/16		DATE: 12/16		DATE: 12/16	NO: TOTAL SHEETS
SCALE: 1" = 20' HORIZONTAL					77 153



ST87600074, 12/5/16

[illegible]

GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	<b>78</b>	153	.

		<b>Civil Engineering - Landscape Architecture</b> 3030 North Central Avenue, Suite 1530, Phoenix Arizona 85012 Ph: 602-305-0031 Fx: 602-305-0032	
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16

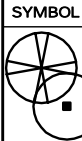


## PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/Common NAME	QTY
<b><u>TREES</u></b>		
	Acacia aneura / Mulga Acacia	-
	Acacia smallii / Sweet Acacia	-
	Caesalpinia calacalo Smoothie/ Thornless Cascalote	-
	Caesalpinia pulcherrima / Red Bird of Paradise	-
	Caesalpinia gilliesii / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	-
	Sophora secundiflora /	-
<b><u>SHRUBS</u></b>		
	Chrysactinia mexicana / Daminiata	-
	Encelia farinosa / Brittlebush	-
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights ® Red Yucca	6
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	-
	Yucca rupicola / Twisted Leaf Yucca	-
<b><u>GROUNDCOVER</u></b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	-
	Macfadyena unguis-cati / Cat's Claw Vine	6
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	-

### PLANT LIST - Additional

Plants for landscape areas outside of SRP  
right-of-way only.

SYMBOL	BOTANICAL/Common Name:	QTY
	<p><b><u>TREES</u></b></p> <p>Prosopis hybrid Phoenix / Mesquite -</p> <p>Parkinsonia microphyllum / Foothill Palo Verde -</p>	
	<p><b><u>SHRUBS</u></b></p> <p>Calliandra californica / Baja Fairy Duster -</p> <p>Eremophila hygrophana / Blue Bells -</p> <p>Eremophila maculata / Valentine -</p> <p>Asclepias subulata / Desert Milkweed -</p> <p>Hesperaloe funifera / Giant Hesperaloe -</p>	
	<p>Existing Trees &amp; Shrubs</p> <p>D.G.</p> <p>McKenna Gold 1/2" Screened</p>	

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16		
SCALE: 1" = 20' HORIZONTAL			78	153

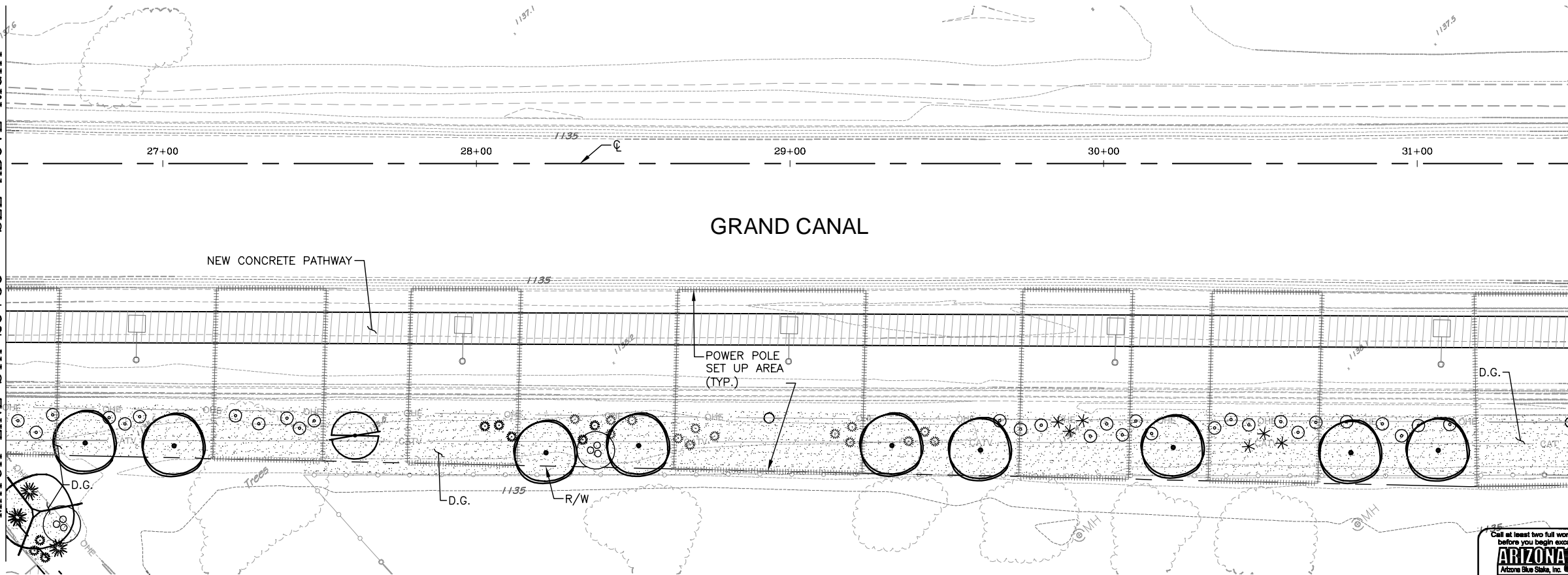
Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

MATCH LINE STA 26+50 - SEE ABOVE RIGHT

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE



MATCH LINE STA 31+50 - SEE SHEET 80

LANDSCAPE PLAN				
CITY OF PHOENIX, ARIZONA				
STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1				
UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			79	153

ST87600074, 12/5/16



MATCH LINE STA 31+50 - SEE SHEET 79

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

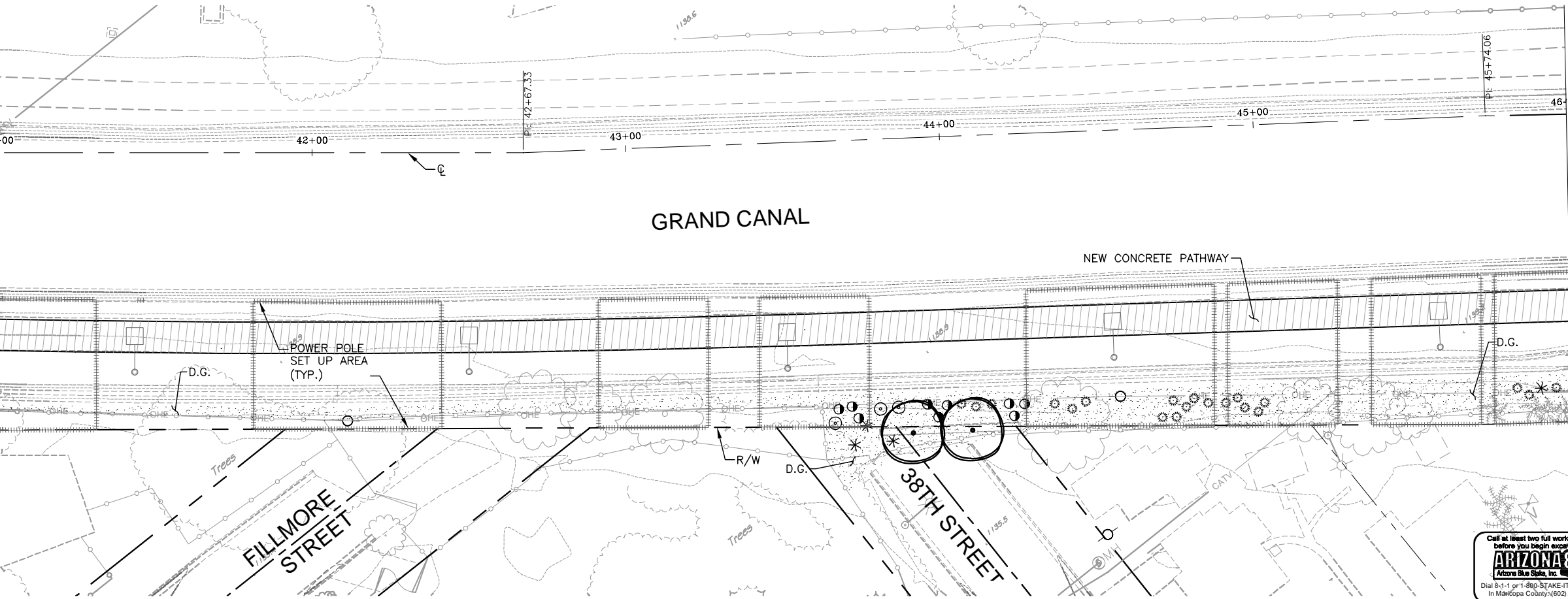


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ST87600074, 12/5/16

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY DATE

MATCH LINE STA 41+00 - SEE ABOVE RIGHT



DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16		
SCALE: 1" = 20' HORIZONTAL			81	153

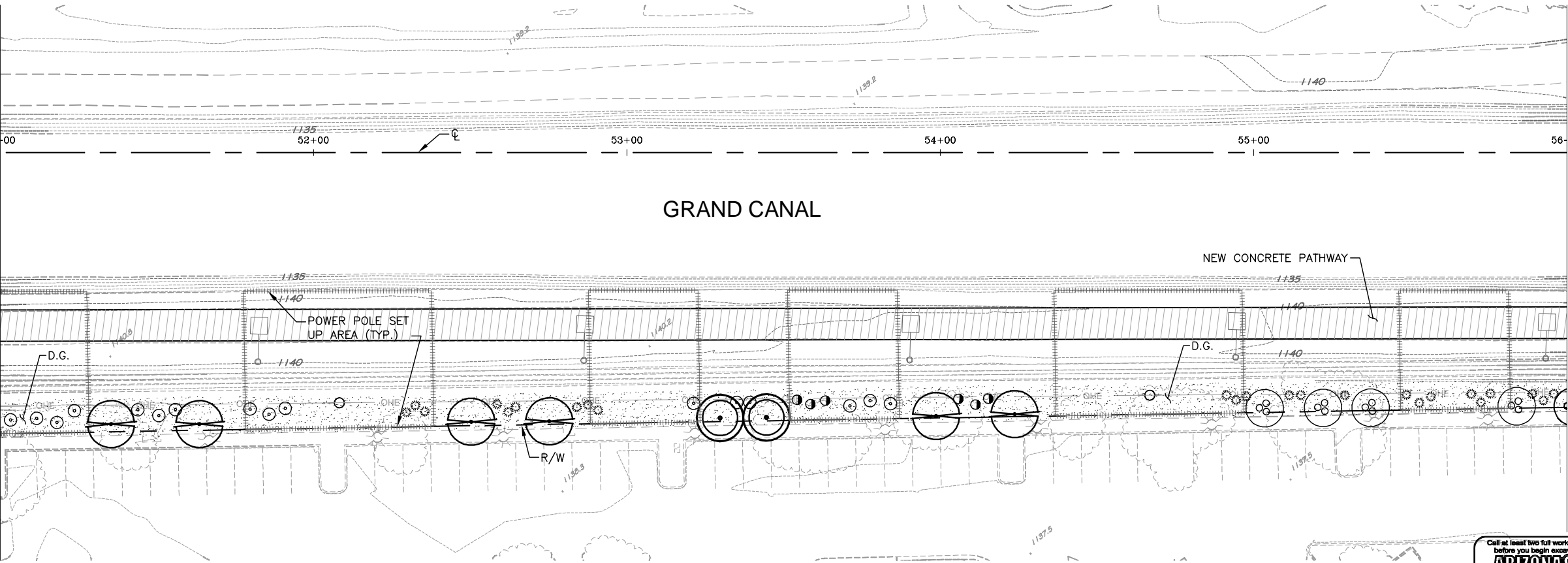
Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CKD BY DATE

MATCH LINE STA 46+00 - SEE SHEET 81



MATCH LINE STA 51+00 - SEE BELOW LEFT

# LANDSCAPE PLAN

## CITY OF PHOENIX, ARIZONA

### STREET TRANSPORTATION DEPARTMENT

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## GRAND CANALSCAPE PHASE 1

### UPTOWN AND GATEWAY NORTH

### ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			82	153

Call at least two full working days  
before you begin excavation.

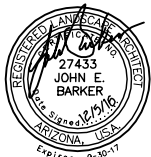
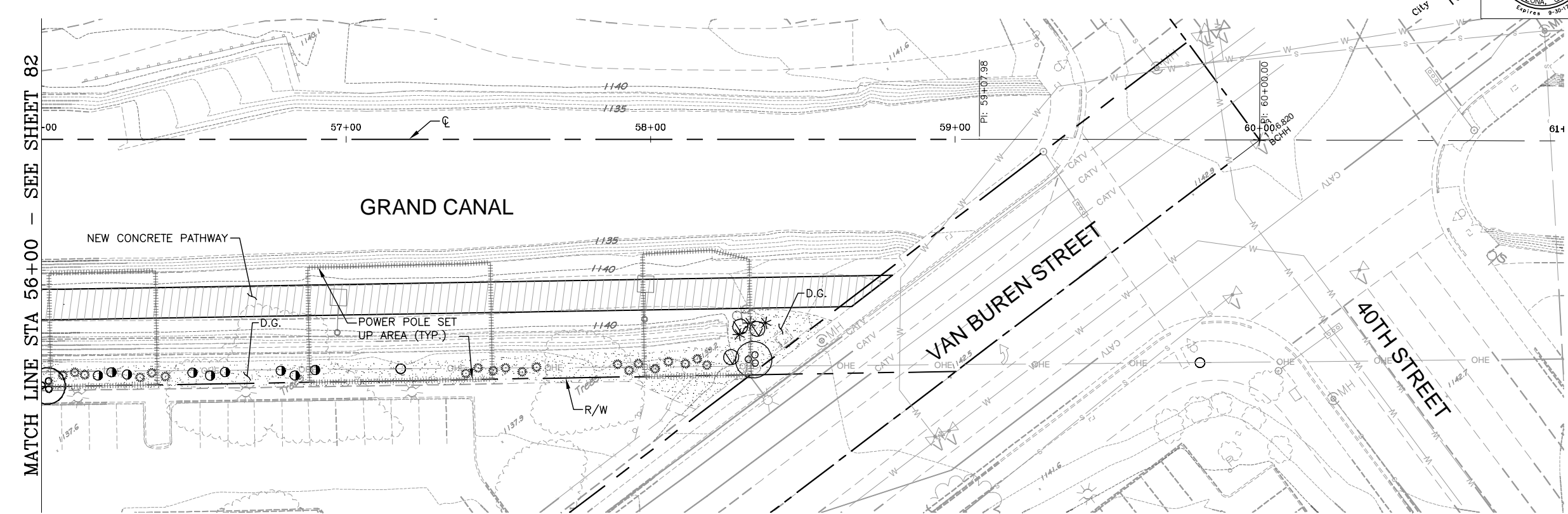
**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

S:\Projects\2015\1503 TYLIN - Grand Canalscape\Cad\Sheets\ST87600074-LS.dwg

[illegible]

GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	83	153	.

**Gavan & Barker** INC. **Civil Engineering - Landscape Architecture**  
3030 North Central Avenue, Suite 1530, Phoenix  
Arizona 85012 Ph: 602-200-0031 Fx: 602-200-0032

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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
## PLANT LIST

For landscape areas within SRP right-of-way.

SYMBOL	BOTANICAL/Common Name:	QTY
<b><u>TREES</u></b>		
	Acacia aneura / Mulga Acacia	-
	Acacia smallii / Sweet Acacia	-
	Caesalpinia cacalaco Smoothie/ Thornless Cascalote	-
	Caesalpinia pulcherrima / Red Bird of Paradise	1
	Caesalpinia gilliesii / Yellow Bird of Paradise	-
	Chilosis linearis / Desert Willow	-
	Fraxinus greggii / Little Leaf Ash	-
	Sophora secundiflora /	-
<b><u>SHRUBS</u></b>		
	Chrysactinia mexicana / Daminiata	9
	Encelia farinosa / Brittlebush	-
	Euphorbia rigida / Gopher Plant	-
	Hesperaloe parviflora 'perpa' / Brakelights ® Red Yucca	3
	Muhlenbergia rigida 'Nashville' / Nashville Muhly Grass	20
	Yucca rupicola / Twisted Leaf Yucca	-
<b><u>GROUND COVER</u></b>		
	Baileya multiradiata / Desert Marigold	-
	Lantana montevidensis Yellow Trailing Lantana	3
	Macfadyena unguis-cati / Cat's Claw Vine	-
	Melampodium leucanthum / Blackfoot Daisy	-
	Psilostrophe cooperi / Paper Flower	-
	Bulbine frutescens / Tiny Tangerine	-
	Zauschneria californica / California Fuchsia	-

## PLANT LIST - Additional

Plants for landscape areas outside of SRP right-of-way only.

SYMBOL	BOTANICAL/Common Name:	QTY
	<b><u>TREES</u></b>	
	Prosopis hybrid Phoenix / Mesquite	-
	Parkinsonia microphyllum / Foothill Palo Verde	-
	<b><u>SHRUBS</u></b>	
	Calliandra californica / Baja Fairy Duster	-
	Eremophila hygrophana / Blue Bells	-
	Eremophila maculata / Valentine	-
	Asclepias subulata / Desert Milkweed	-
	Hesperaloe funifera / Giant Hesperaloe	-
	Existing Trees & Shrubs	
	Decomposed Granite, McKenna Gold 1/2" Screened	12.1 C.Y.

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## LANDSCAPE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16		
SCALE: 1" = 20' HORIZONTAL			83	153



ST87600074, 12/5/16





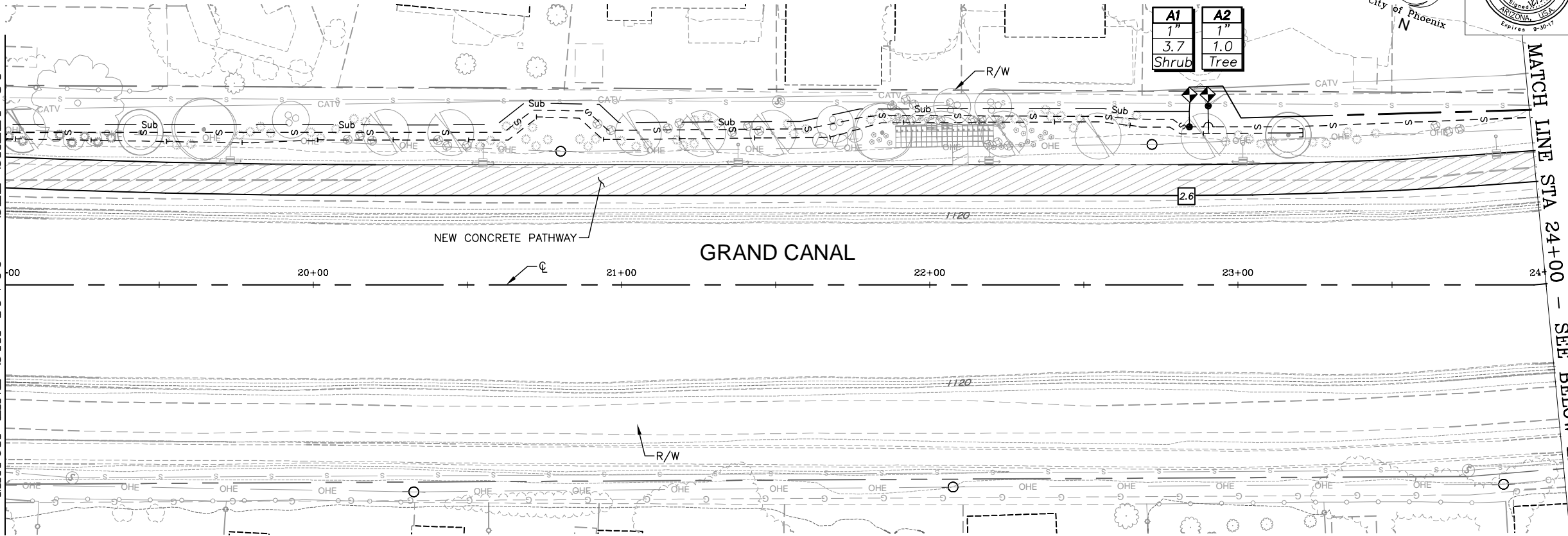
NO.	REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CKD BY	DATE

NO.	REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CKD BY	DATE

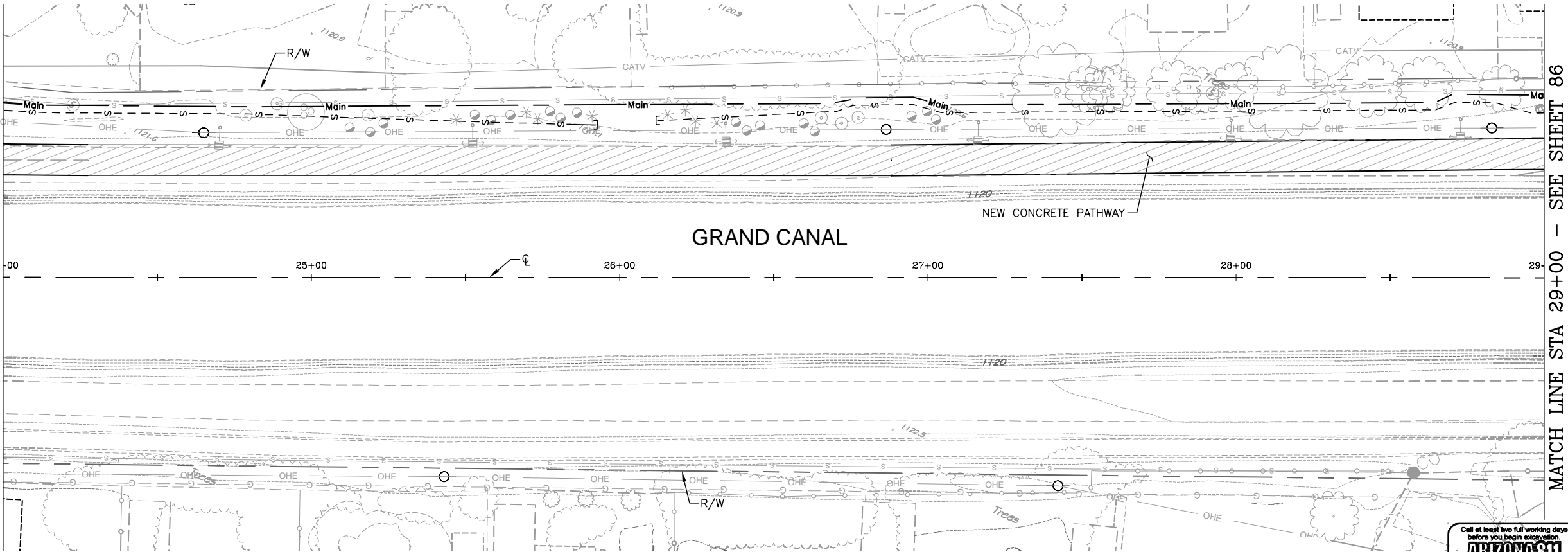
NO.	REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CKD BY	DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

MATCH LINE STA 19+00 - SEE SHEET 84



MATCH LINE STA 24+00 - SEE ABOVE RIGHT



MATCH LINE STA 24+00 - SEE BELOW LEFT

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	85	153	

**Gavan Barker**  
Civil Engineering - Landscape Architecture  
27433 JOHN E. BARKER  
Arizona State License # 27433  
Expires 9-30-17

DES: JEB/JDH DR: AJA/JDH CK: JEB DATE: 12/16

IRRIGATION LEGEND		
SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	620 L.F.
—Sub—	PVC Sub-Main Line (3/4")	395 L.F.
—	PVC Lateral: Trees (1/2")	435 L.F.
—S	PVC Lateral: Shrubs (1/2")	985 L.F.
—( )—	3" PVC Irrigation Sleeve	.
△	Controller (Electric 6 Station)	.
M	3/4" Water Meter	.
RP	Reduced Pressure Backflow Preventer (1")	.
MV	1" Master Valve	.
FS	Flow Meter (1") w/ Flow Sensor Cable	.
QV	Quick Coupler Valve Assembly	.
EV	1" Electric Valve	2
PR	Pressure Regulator Assembly	2
PB	Pull Box	.
(not shown)	Multi-Outlet Emitter Assembly: Trees	19
(not shown)	Single-Outlet Emitter Assembly: Shrubs	121
—	End Flush Cap	4

A1	Station Number
1"	Valve Size
6.2	Gallons Per Minute
Tree	Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

IRRIGATION PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH DATE: 12/16	DES: JEB/JDH DATE: 12/16	CK: JEB DATE: 12/16	SHEET NO: 85	TOTAL SHEETS: 153
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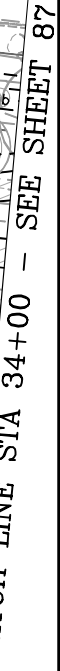
SCALE: 1" = 20' HORIZONTAL

Call at least two full working days before you begin excavation.

**ARIZONA 811**  
Arizona Statewide, Inc.  
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

[illegible]

MATCH LINE STA 29+00 - SEE SHEET 85



ST87600074, 12/5/16



TY Lin Half Scale.ctb

Joel Hormann

12/5/2016 5:23:01 PM

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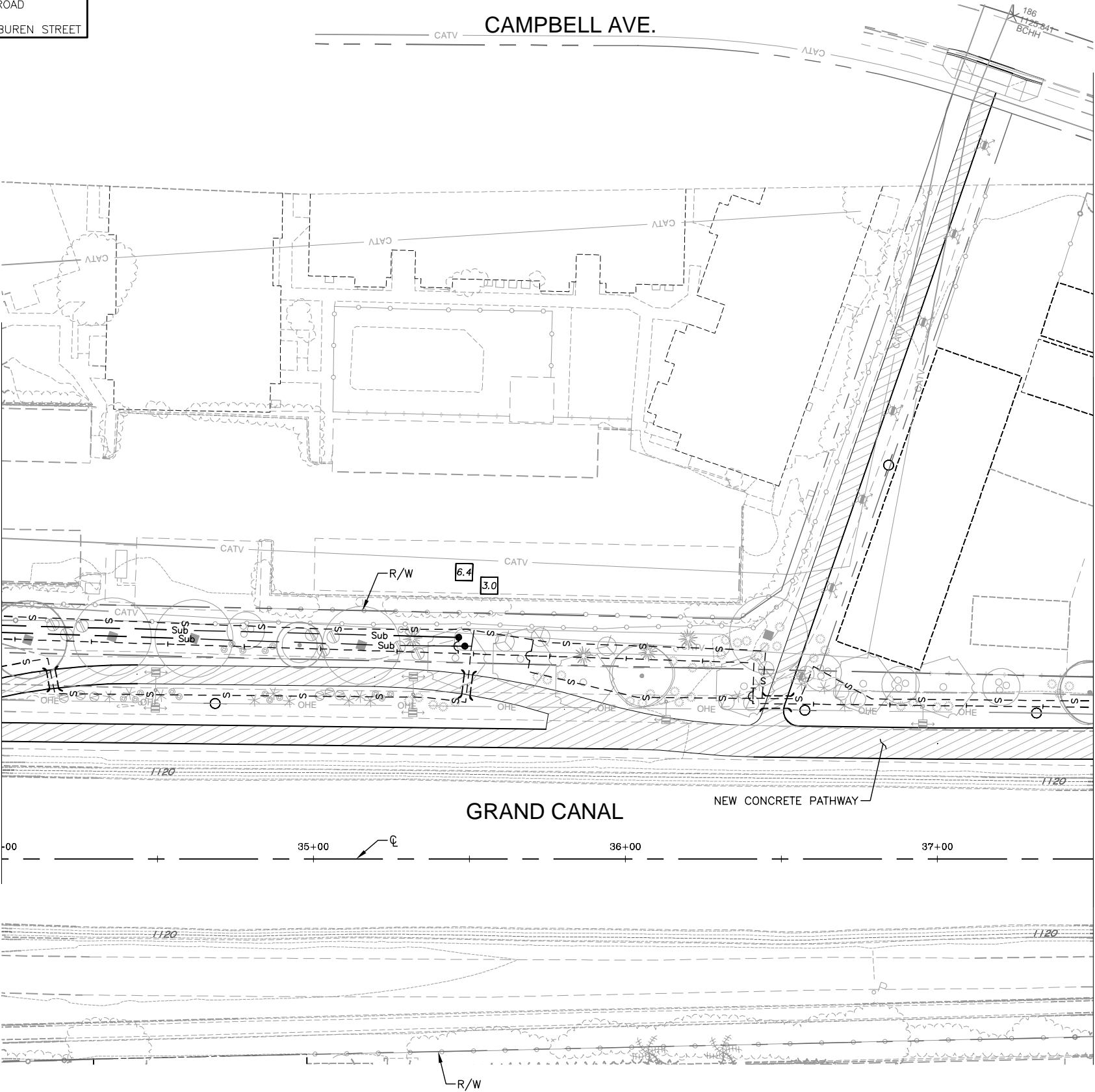
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

MATCH LINE STA 34+00 - SEE SHEET 86



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	87	153	.

**Gavan Barker**  
Civil Engineering - Landscape Architecture  
3520 North Central Avenue, Suite 1100, Phoenix, Arizona 85012 | P: 602-255-0271 | F: 602-255-0272

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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IRRIGATION LEGEND

SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	-
—Sub—	PVC Sub-Main Line (3/4")	300 L.F.
—T—	PVC Lateral: Trees (1/2")	375 L.F.
—S—	PVC Lateral: Shrubs (1/2")	660 L.F.
( )	3" PVC Irrigation Sleeve	28 L.F.
△	Controller (Electric 6 Station)	-
M	3/4" Water Meter	-
RP	Reduced Pressure Backflow Preventer (1")	-
MV	1" Master Valve	-
FS	Flow Meter (1") w/ Flow Sensor Cable	-
Q	Quick Coupler Valve Assembly	-
◇	1" Electric Valve	-
●	Pressure Regulator Assembly	2
☒	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	18
(not shown)	Single-Outlet Emitter Assembly: Shrubs	97
—	End Flush Cap	-

<b>A1</b>	— Station Number
<b>1"</b>	— Valve Size
<b>6.2</b>	— Gallons Per Minute
<b>Tree</b>	— Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

IRRIGATION PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO.	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	87	153

SCALE: 1" = 20' HORIZONTAL



ST87600074, 12/5/16

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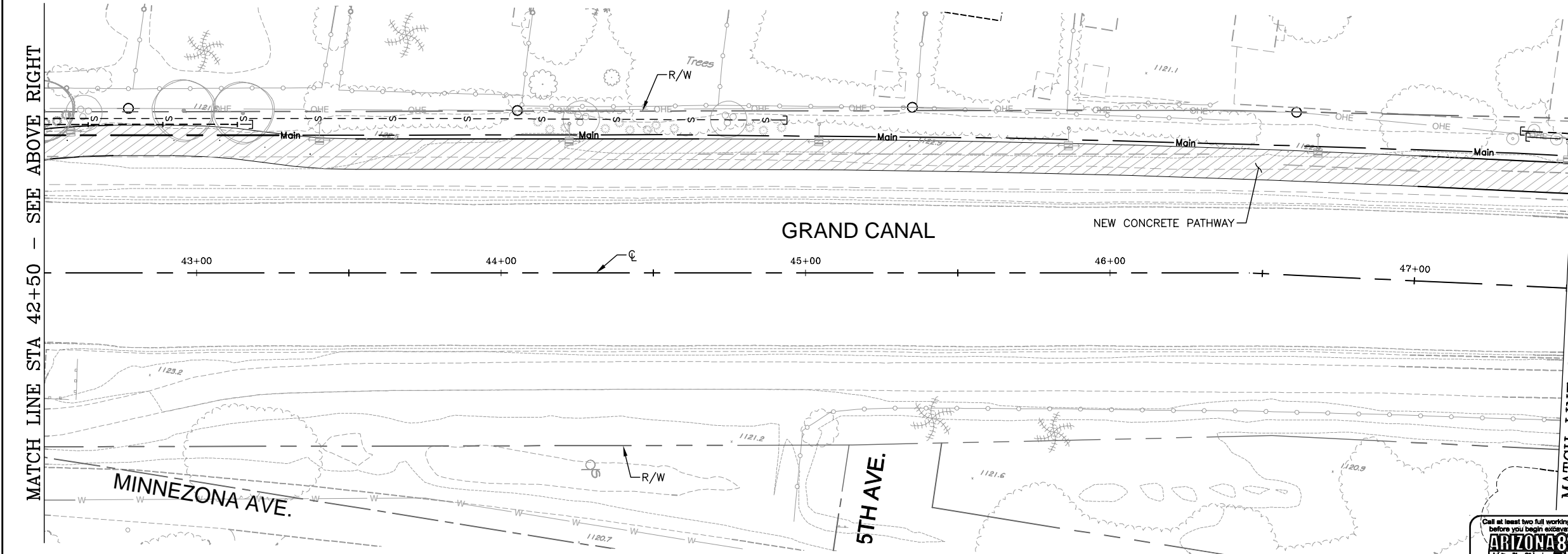
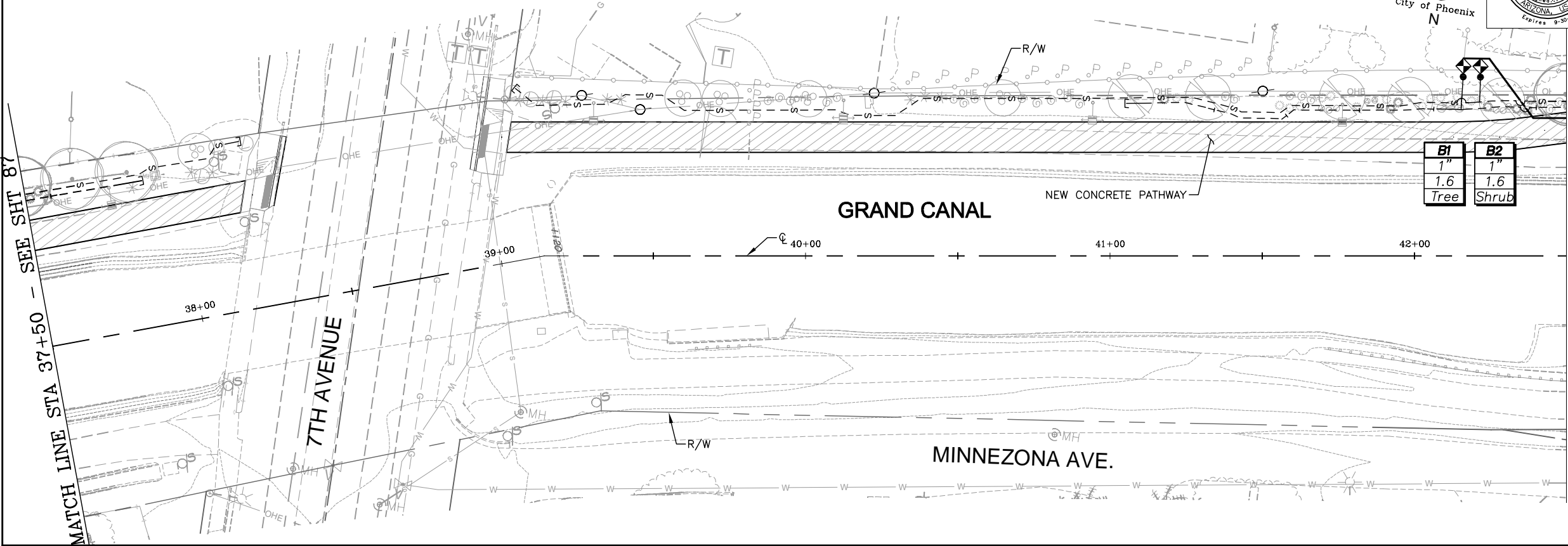
Joel Hornum

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	88	153	

DES: JEB/JDH		DR: AJA/JDH	CK: JEB	DATE: 12/16
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SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	545 L.F.
—Sub—	PVC Sub-Main Line (3/4")	-
—T—	PVC Lateral: Trees (1/2")	275 L.F.
—S—	PVC Lateral: Shrubs (1/2")	685 L.F.
( )	3" PVC Irrigation Sleeve	-
△	Controller (Electric 6 Station)	-
M	3/4" Water Meter	-
RP	Reduced Pressure Backflow Preventer (1")	-
MV	1" Master Valve	-
FS	Flow Meter (1") w/ Flow Sensor Cable	-
Q	Quick Coupler Valve Assembly	-
◇	1" Electric Valve	2
●	Pressure Regulator Assembly	2
⊠	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	18
(not shown)	Single-Outlet Emitter Assembly: Shrubs	93
—	End Flush Cap	7

A1	Station Number
1"	Valve Size
6.2	Gallons Per Minute
Tree	Tree / Shrub

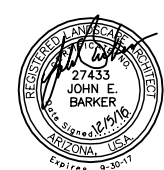
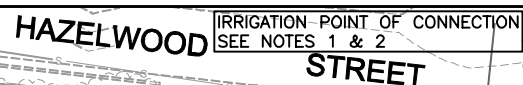
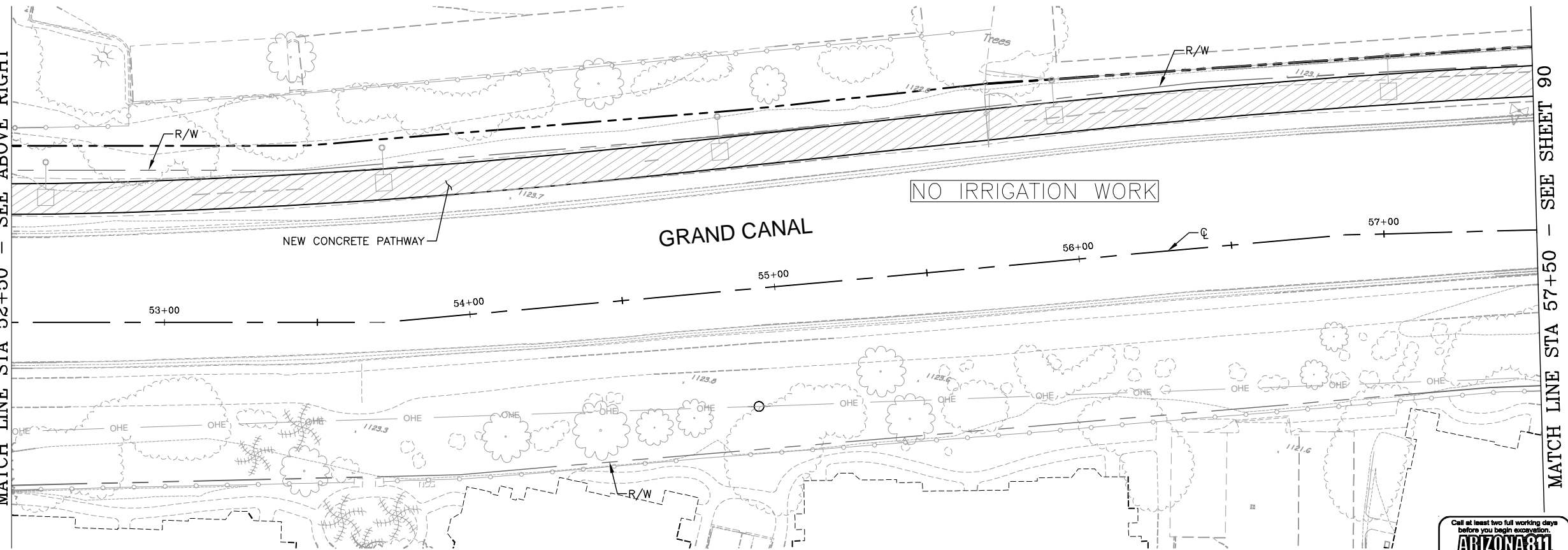
CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.  
\*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.\*

IRRIGATION PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	88	153
SCALE: 1" = 20' HORIZONTAL				



ST87600074, 12/5/16

MATCH LINE STA 52+50 - SEE ABOVE RIGHT

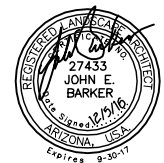
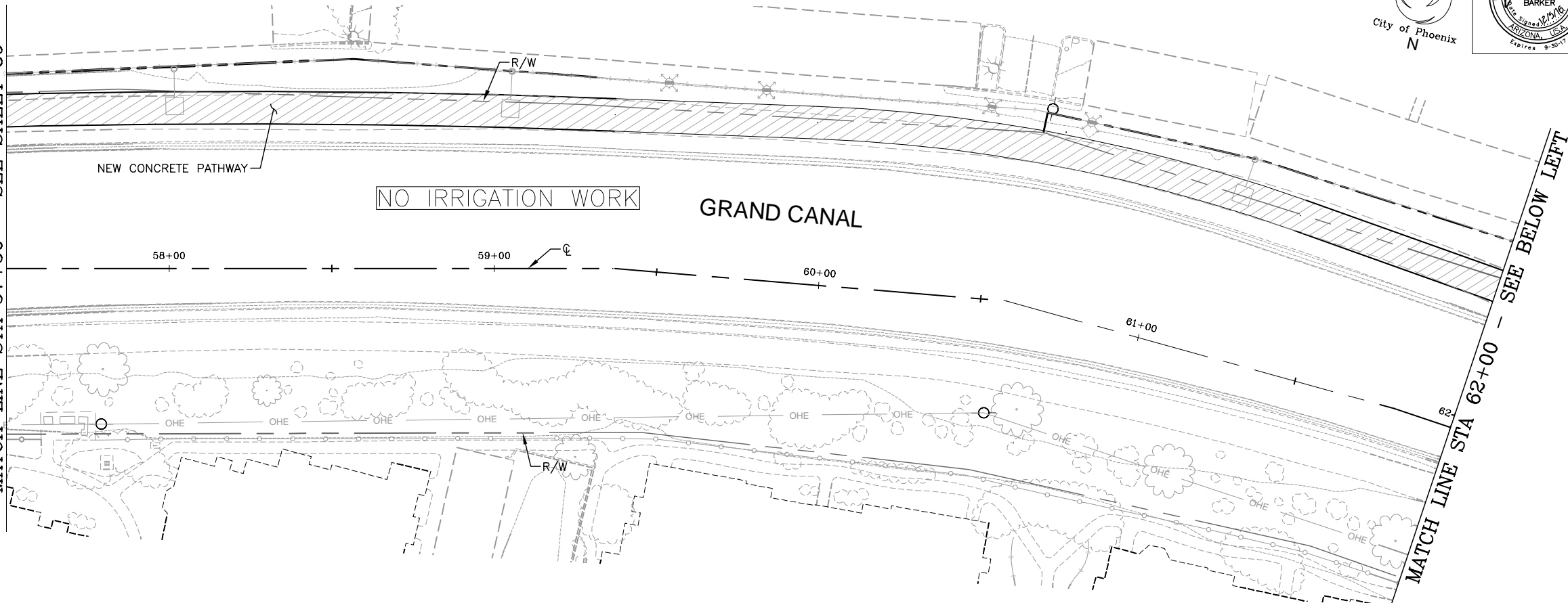


DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			89	153

**Call at least two full working days  
before you begin excavation.**  
**ARIZONA 811**  
Arizona Blue Stake, Inc.  
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

[illegible]

MATCH LINE: STA 57+50 - SEE SHEET 89



 <b>Civil Engineering - Landscape Architecture</b> 3030 North Central Avenue, Suite 1530, Phoenix Arizona 85012 Ph: 602-260-0031 Fax: 602-260-0032			
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16

## IRRIGATION LEGEND

<b>A1</b>	← Station Number
1"	← Valve Size
6.2	← Gallons Per Minute
Tree	← Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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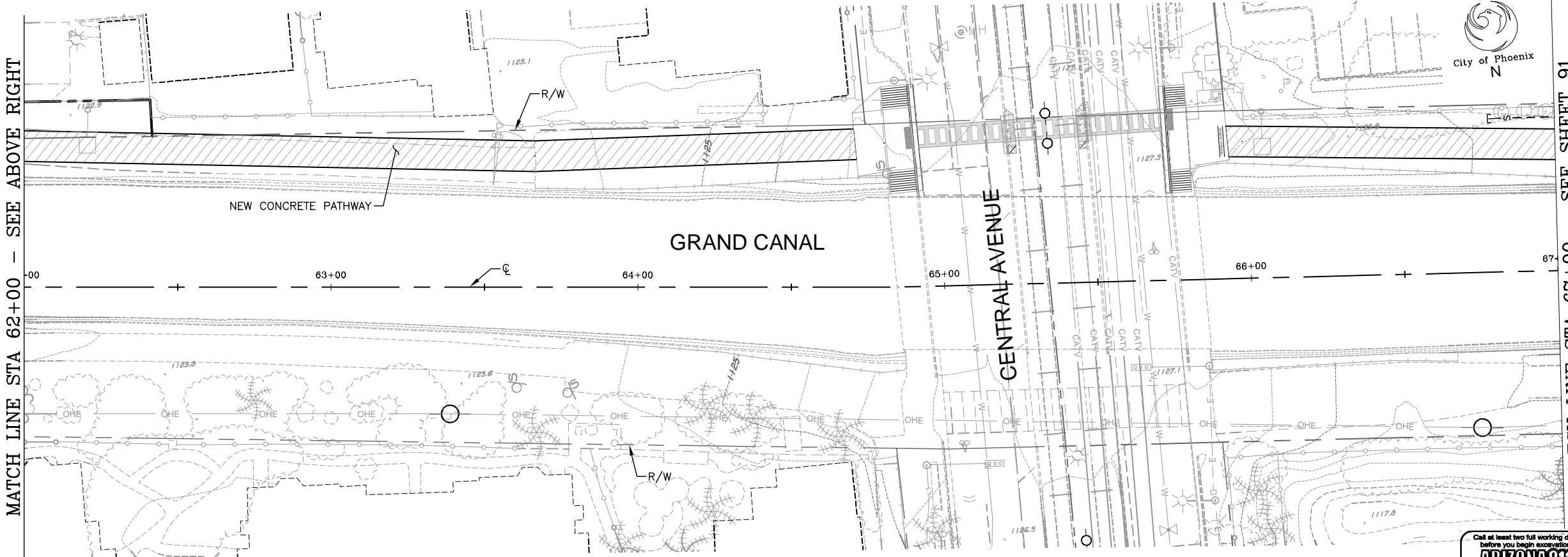
GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			90	153

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before you begin excavation.

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Arizona Blue Stake, Inc.

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In Maricopa County: (602) 263-1100



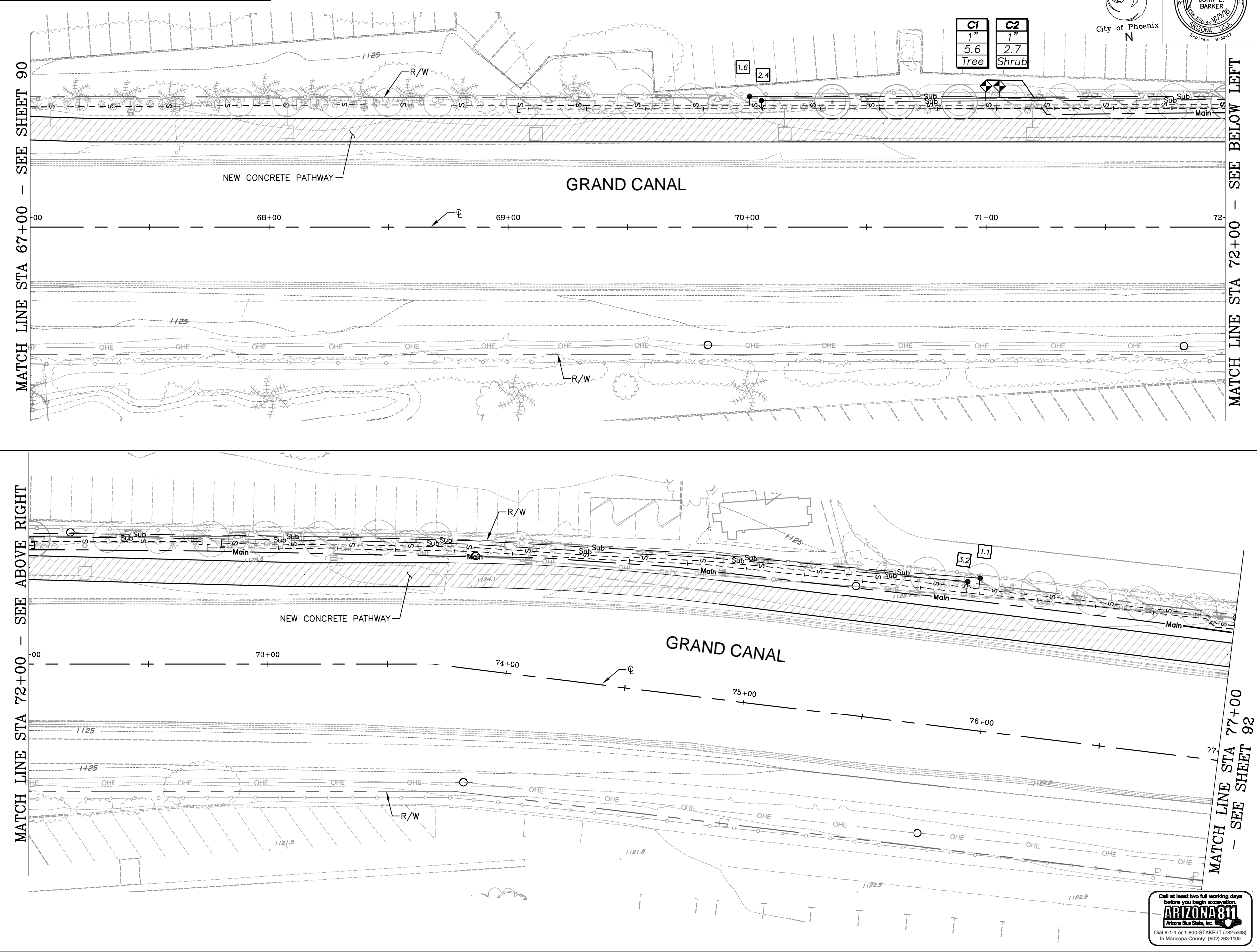
MATCH LINE STA 62+00 - SEE ABOVE RIGHT

MATCH LINE STA 67+00 - SEE SHEET 91

ST87600074, 12/5/16

REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX	
DESCRIPTION		DESCRIPTION		DESCRIPTION	
NO.	REV BY CKD BY DATE	NO.	REV BY CKD BY DATE	NO.	REV BY CKD BY DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	91	153	

<b>Gavan Barker</b> Civil Engineering - Landscape Architecture 3030 North Central Avenue, Suite 1100, Phoenix, Arizona 85012 Ph: 602-255-0071 Fx: 602-255-0072			
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16

IRRIGATION LEGEND		
SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	1,190 L.F.
—Sub—	PVC Sub-Main Line (3/4")	635 L.F.
—L—	PVC Lateral: Trees (1/2")	740 L.F.
—S—	PVC Lateral: Shrubs (1/2")	1,005 L.F.
( )	3" PVC Irrigation Sleeve	-
△	Controller (Electric 6 Station)	-
M	3/4" Water Meter	-
RP	Reduced Pressure Backflow Preventer (1")	-
MV	1" Master Valve	-
FS	Flow Meter (1") w/ Flow Sensor Cable	-
Q	Quick Coupler Valve Assembly	-
◇	1" Electric Valve	-
●	Pressure Regulator Assembly	4
⊠	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	33
(not shown)	Single-Outlet Emitter Assembly: Shrubs	128
—	End Flush Cap	5

A1	Station Number
1"	Valve Size
6.2	Gallons Per Minute
Tree	Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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**ARIZONA 811**  
Arizona Blue Stake, Inc.  
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In Maricopa County: (602) 263-1100



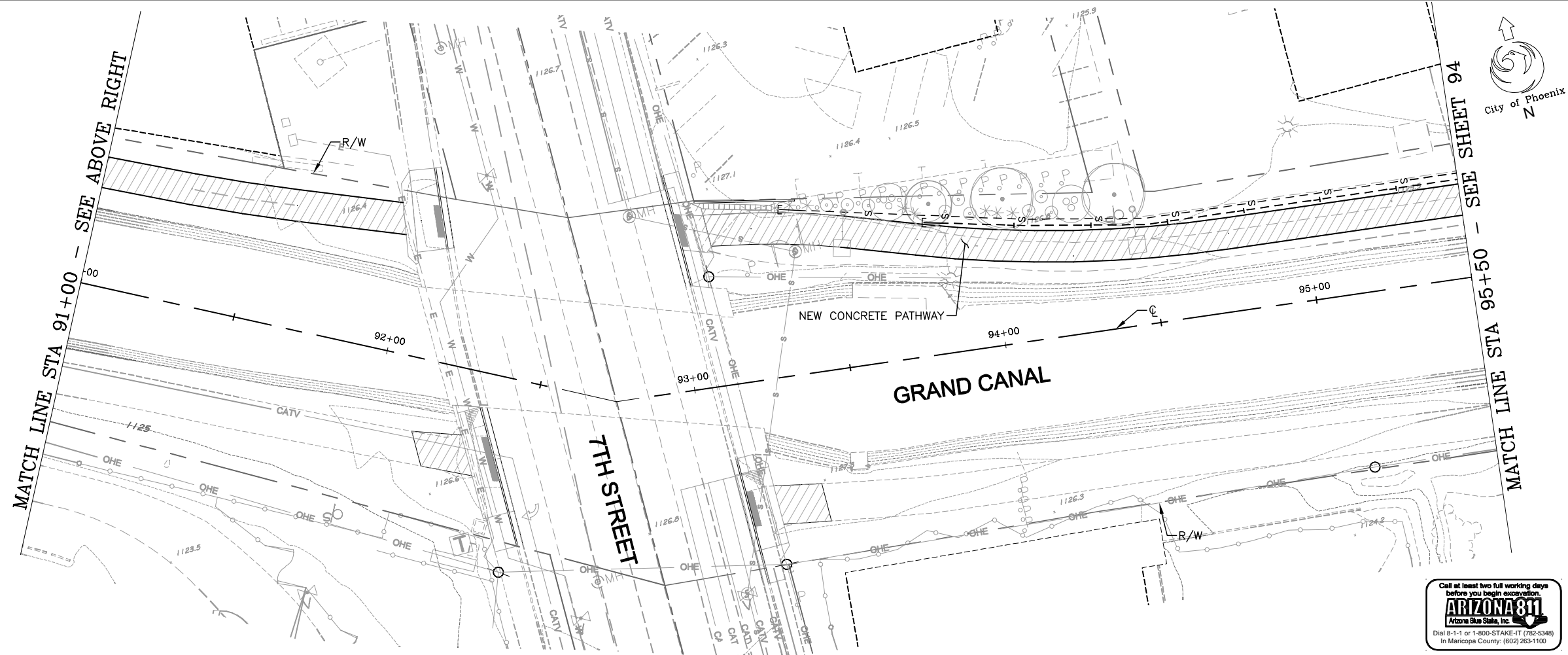
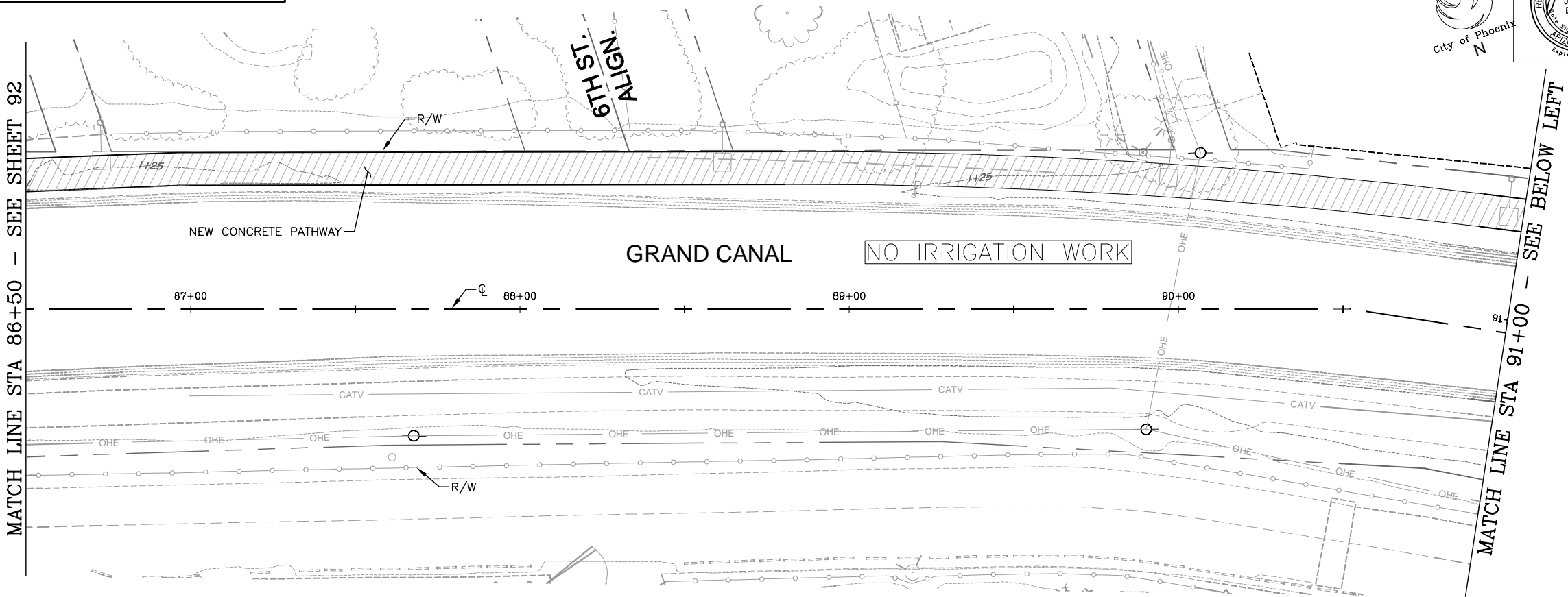


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GRAND CANALSCAPE PHASE 1










UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	93	153	.

 <div style="display: inline-block; vertical-align: middle; margin-left: 10px;"> <b>Civil Engineering - Landscape Architecture</b>  <small>3030 North Central Avenue, Suite 1530, Phoenix              Arizona 85012 P: 602-300-0031 F: 602-200-0032</small> </div>			
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16

IRRIGATION LEGEND		
SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	-
—Sub—	PVC Sub-Main Line (3/4")	
—T—	PVC Lateral: Trees (1/2")	170 L.F.
—S—	PVC Lateral: Shrubs (1/2")	215 L.F.
---	3" PVC Irrigation Sleeve	-
	Controller (Electric 6 Station)	-
	3/4" Water Meter	-
	Reduced Pressure Backflow Preventer (1")	-
	1" Master Valve	-
	Flow Meter (1") w/ Flow Sensor Cable	-
	Quick Coupler Valve Assembly	-
	1" Electric Valve	-
●	Pressure Regulator Assembly	-
	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	7
(not shown)	Single-Outlet Emitter Assembly: Shrubs	17
	End Flush Cap	2

<b>A1</b>	← Station Number
1"	← Valve Size
6.2	← Gallons Per Minute
Tree	← Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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<h1 style="text-align: center;">IRRIGATION PLAN</h1> <h2 style="text-align: center;">CITY OF PHOENIX, ARIZONA</h2> <h3 style="text-align: center;">STREET TRANSPORTATION DEPARTMENT</h3> <h2 style="text-align: center;">GRAND CANALSCAPE PHASE 1</h2> <h2 style="text-align: center;">UPTOWN AND GATEWAY NORTH</h2> <h2 style="text-align: center;">ST87600074</h2>				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			93	153

Call at least two full working days  
before you begin excavation.

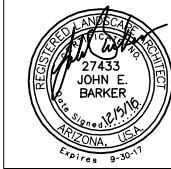
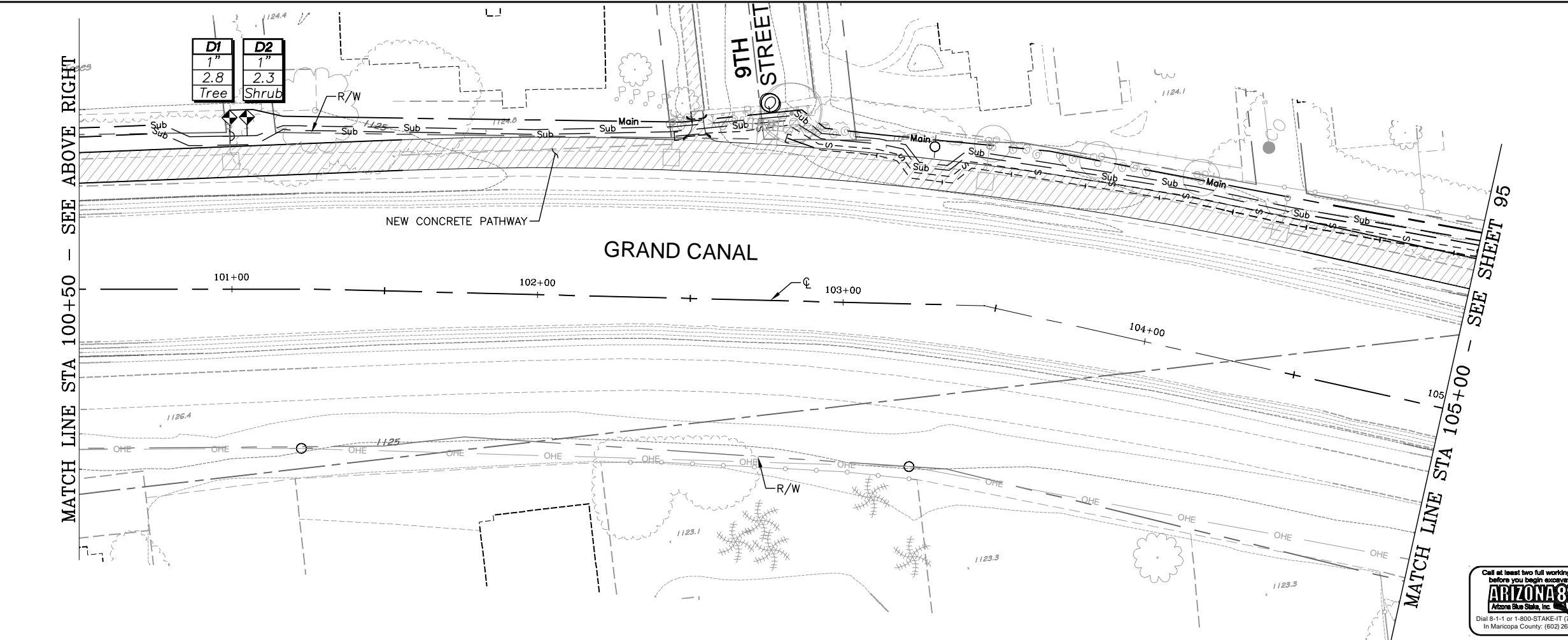
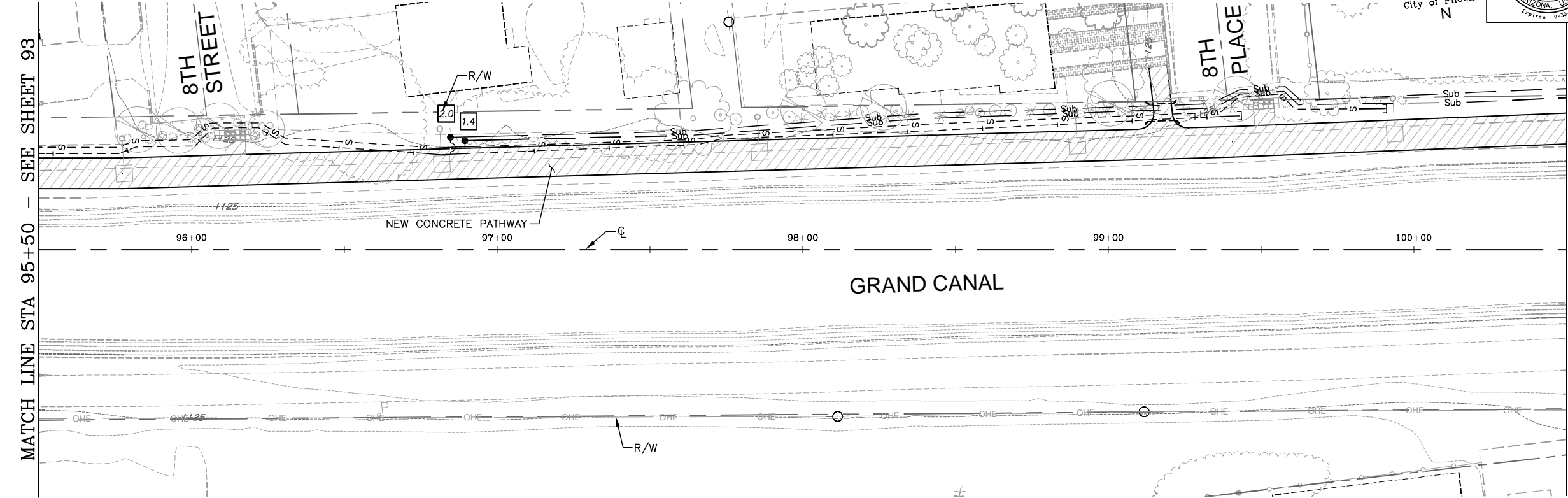
**ARIZONA 811**  
Arizona Blue Stake, Inc.

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In Maricopa County: (602) 263-1100











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GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	<b>94</b>	153	.

		<b>Civil Engineering - Landscape Architecture</b> 3030 North Central Avenue, Suite 1530, Phoenix Arizona 85012 PH: 602-269-0031 FX: 602-269-0032	
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16

SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	415 L.F.
—Sub—	PVC Sub-Main Line (3/4")	1,680 L.F.
—T—	PVC Lateral: Trees (1/2")	630 L.F.
—S—	PVC Lateral: Shrubs (1/2")	720 L.F.
—(—)(—)—	3" PVC Irrigation Sleeve	18 L.F.
	Controller (Electric 6 Station)	-
	3/4" Water Meter	-
	Reduced Pressure Backflow Preventer (1")	-
	1" Master Valve	-
	Flow Meter (1") w/ Flow Sensor Cable	-
	Quick Coupler Valve Assembly	1
	1" Electric Valve	2
●	Pressure Regulator Assembly	2
	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	15
(not shown)	Single-Outlet Emitter Assembly: Shrubs	86
—┐	End Flush Cap	4

<b>A1</b>	← Station Number
1"	← Valve Size
6.2	← Gallons Per Minute
Tree	← Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

IRRIGATION PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			94	153

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

ST87600074, 12/5/16



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Joel Hormann

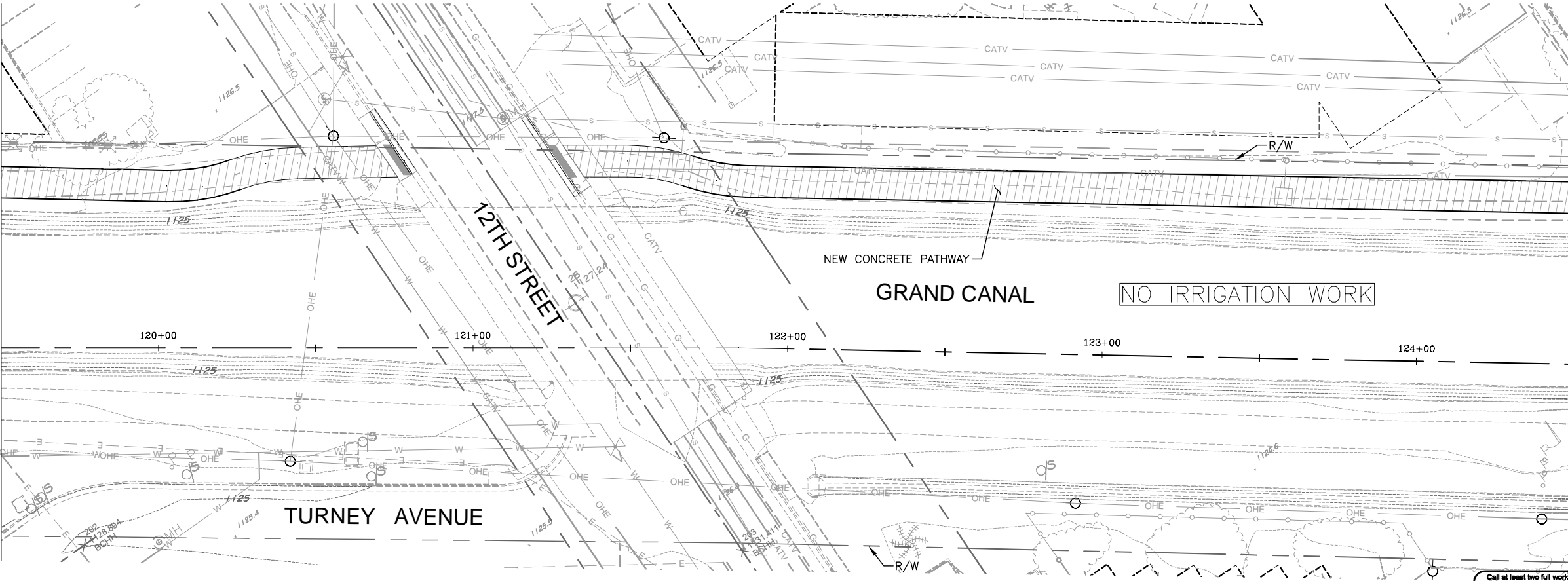
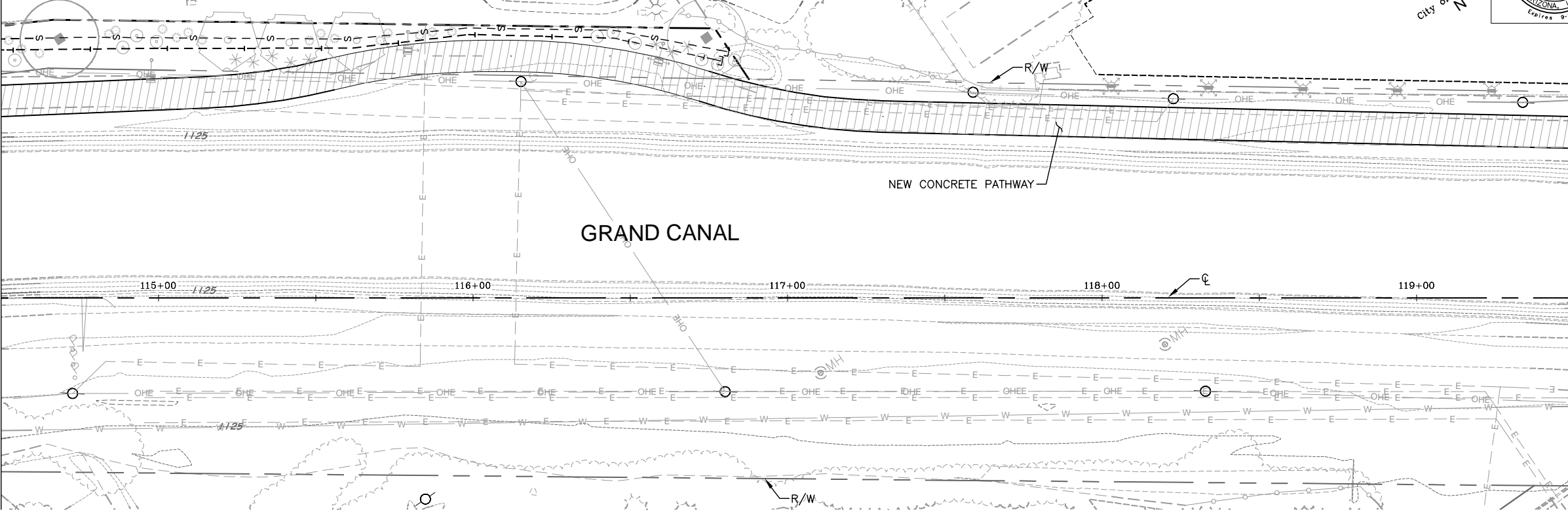
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REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX	
DESCRIPTION		DESCRIPTION		DESCRIPTION	
NO.	REV BY CKD BY DATE	NO.	REV BY CKD BY DATE	NO.	REV BY CKD BY DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

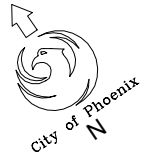
MATCH LINE STA 114+50 - SEE SHEET 95

MATCH LINE STA 119+50 - SEE ABOVE RIGHT



MATCH LINE STA 119+50 - SEE BELOW LEFT

MATCH LINE STA 124+50 - SEE SHEET 97



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	96	153	

**Gavan Barker** Civil Engineering - Landscape Architecture  
3030 North Central Avenue, Suite 1100, Phoenix, Arizona 85012 Ph: (602) 263-1100 Fax: (602) 263-0832

DES: JEB/JDH DR: AJA/JDH CK: JEB DATE: 12/16

### IRRIGATION LEGEND

SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	-
—Sub—	PVC Sub-Main Line (3/4")	-
—Lateral—	PVC Lateral: Trees (1/2")	230 L.F.
—Lateral—	PVC Lateral: Shrubs (1/2")	230 L.F.
( )	3" PVC Irrigation Sleeve	-
△	Controller (Electric 6 Station)	-
M	3/4" Water Meter	-
RP	Reduced Pressure Backflow Preventer (1")	-
MV	1" Master Valve	-
FS	Flow Meter (1") w/ Flow Sensor Cable	-
Q	Quick Coupler Valve Assembly	-
◇	1" Electric Valve	-
●	Pressure Regulator Assembly	-
⊠	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	12
(not shown)	Single-Outlet Emitter Assembly: Shrubs	63
—	End Flush Cap	2

<b>A1</b>	Station Number
<b>1"</b>	Valve Size
<b>6.2</b>	Gallons Per Minute
<b>Tree</b>	Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

\*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.\*

IRRIGATION PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO.	SHEETS
SCALE: 1" = 20' HORIZONTAL			96	153



ST87600074, 12/5/16

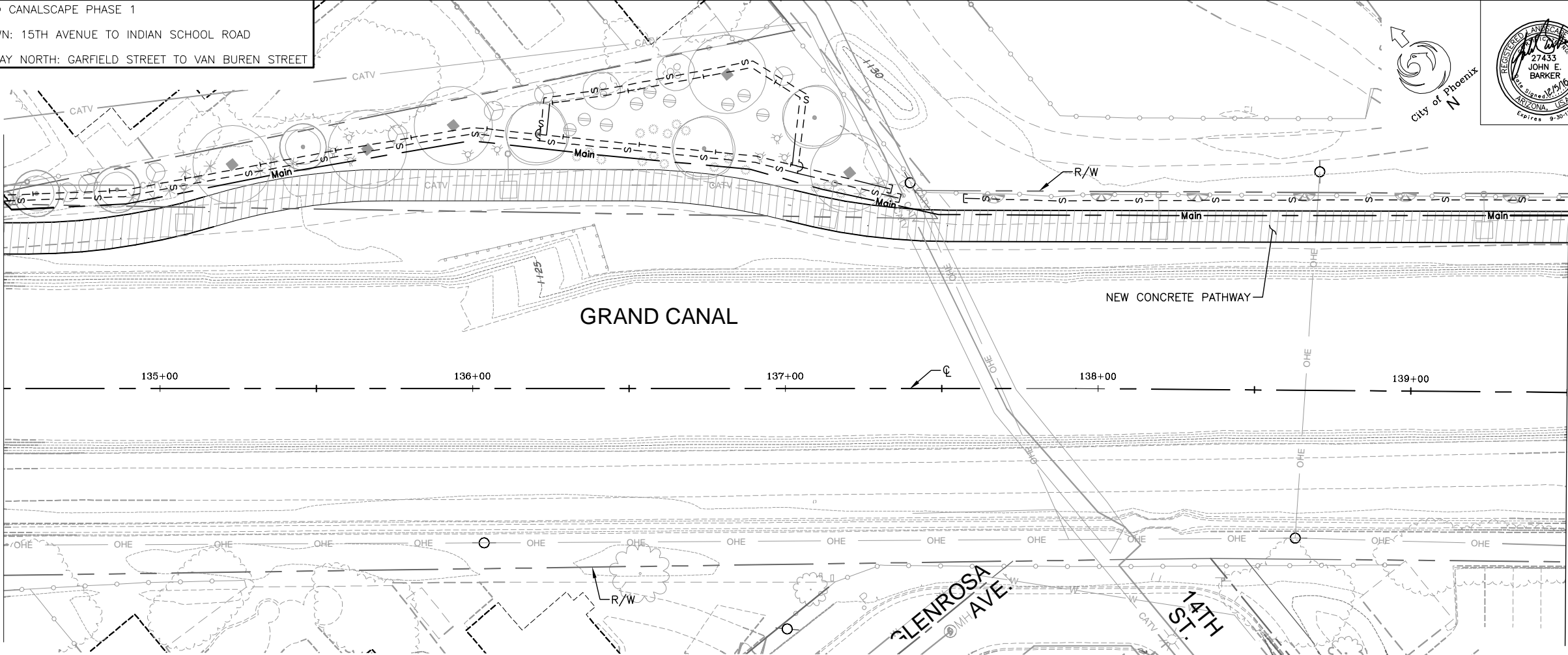


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REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

MATCH LINE STA 134+50 – SEE SHEET 97



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	98	153	

**Gavan Barker**  
Civil Engineering - Landscape Architecture  
27433 JOHN E. BARKER  
Arizona State License No. 27433  
Expires 9/30/17

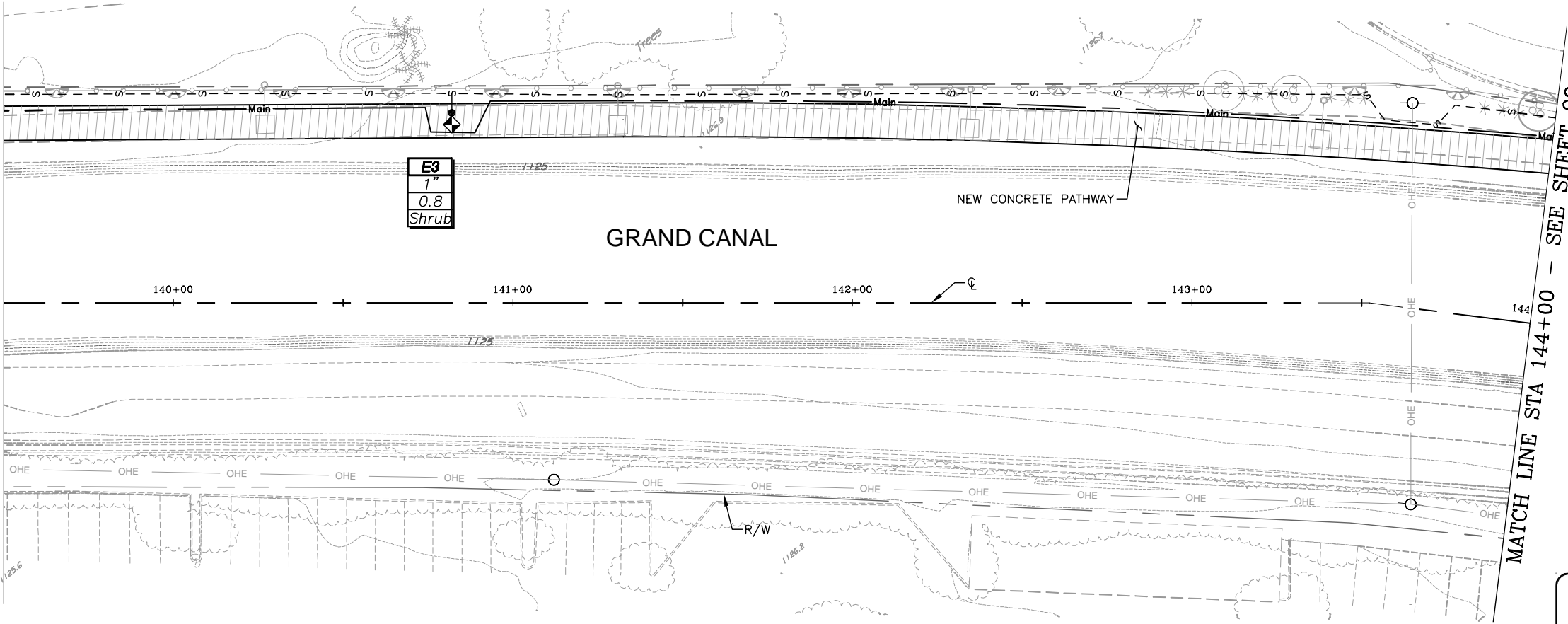
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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### IRRIGATION LEGEND

SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	970 L.F.
—Sub—	PVC Sub-Main Line (3/4")	-
—T—	PVC Lateral: Trees (1/2")	645 L.F.
—S—	PVC Lateral: Shrubs (1/2")	1,080 L.F.
( )	3" PVC Irrigation Sleeve	-
△	Controller (Electric 6 Station)	-
M	3/4" Water Meter	-
RP	Reduced Pressure Backflow Preventer (1")	-
RV	1" Master Valve	-
FS	Flow Meter (1") w/ Flow Sensor Cable	-
Q	Quick Coupler Valve Assembly	-
◇	1" Electric Valve	1
●	Pressure Regulator Assembly	1
⊠	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	16
(not shown)	Single-Outlet Emitter Assembly: Shrubs	86
—	End Flush Cap	3

**A1** — Station Number  
**1"** — Valve Size  
**6.2** — Gallons Per Minute  
**Tree** — Tree / Shrub

MATCH LINE STA 139+50 – SEE ABOVE RIGHT



MATCH LINE STA 144+00 – SEE SHEET 99



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.					
*PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.*					
IRRIGATION PLAN					
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT					
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074					
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL	
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS	
SCALE: 1" = 20' HORIZONTAL			98	153	

ST87600074, 12/5/16



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Joel Hormann

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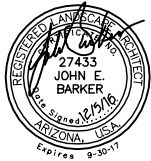
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REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

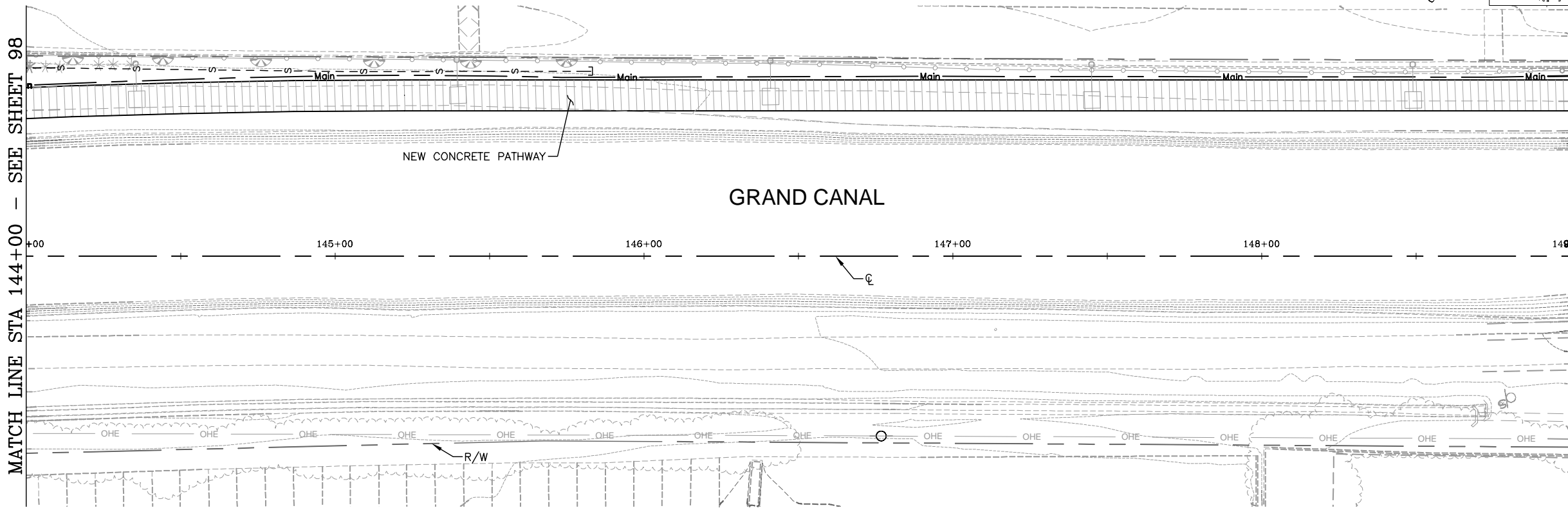
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

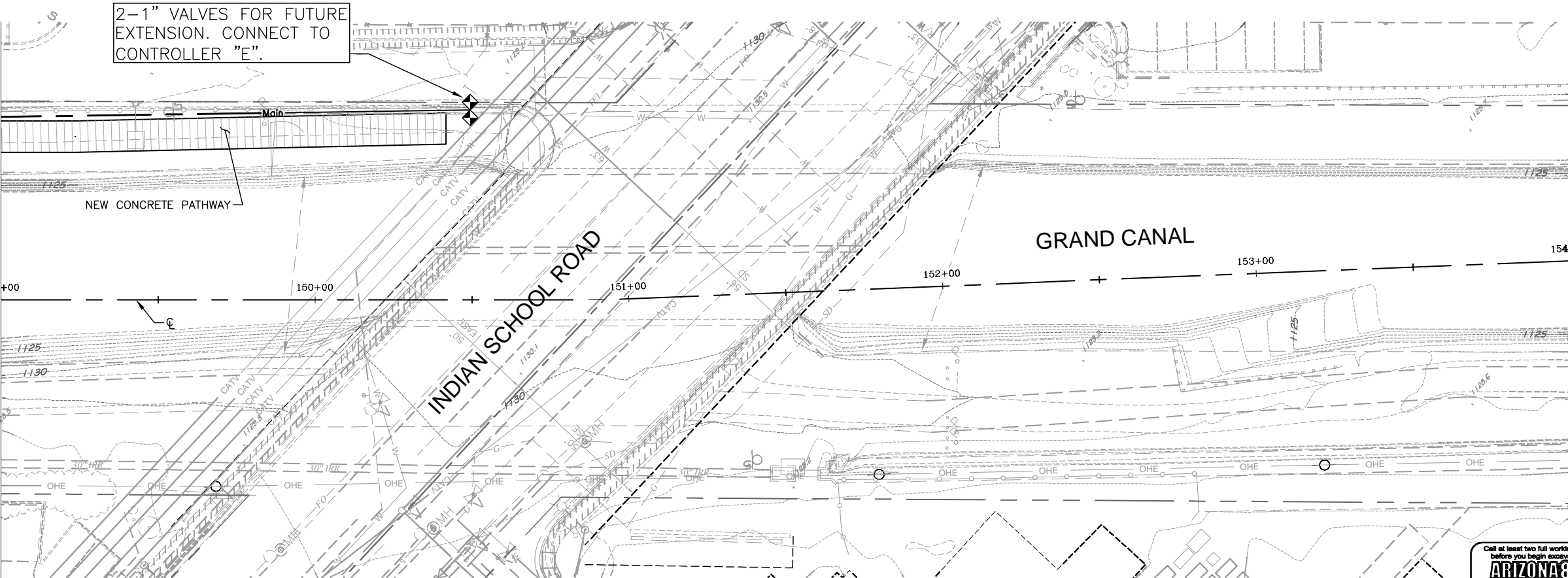


MATCH LINE STA 144+00 - SEE SHEET 98

MATCH LINE STA 149+00 - SEE BELOW LEFT



MATCH LINE STA 149+00 - SEE ABOVE RIGHT



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	99	153	

Civil Engineering - Landscape Architecture  
3030 North Central Avenue, Suite 1100, Phoenix, Arizona 85012 | Ph: 602-263-0271 | F: 602-263-0272

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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IRRIGATION LEGEND		
SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	655 L.F.
—Sub—	PVC Sub-Main Line (3/4")	-
—T—	PVC Lateral: Trees (1/2")	-
—S—	PVC Lateral: Shrubs (1/2")	185 L.F.
( )	3" PVC Irrigation Sleeve	-
△	Controller (Electric 6 Station)	-
M	3/4" Water Meter	-
RP	Reduced Pressure Backflow Preventer (1")	-
MV	1" Master Valve	-
FS	Flow Meter (1") w/ Flow Sensor Cable	-
⊗	Quick Coupler Valve Assembly	-
◇	1" Electric Valve	2
●	Pressure Regulator Assembly	-
⊠	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	-
(not shown)	Single-Outlet Emitter Assembly: Shrubs	12
—	End Flush Cap	1

A1	Station Number
1"	Valve Size
6.2	Gallons Per Minute
Tree	Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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IRRIGATION PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH ST87600074				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	99	153
SCALE: 1" = 20' HORIZONTAL				



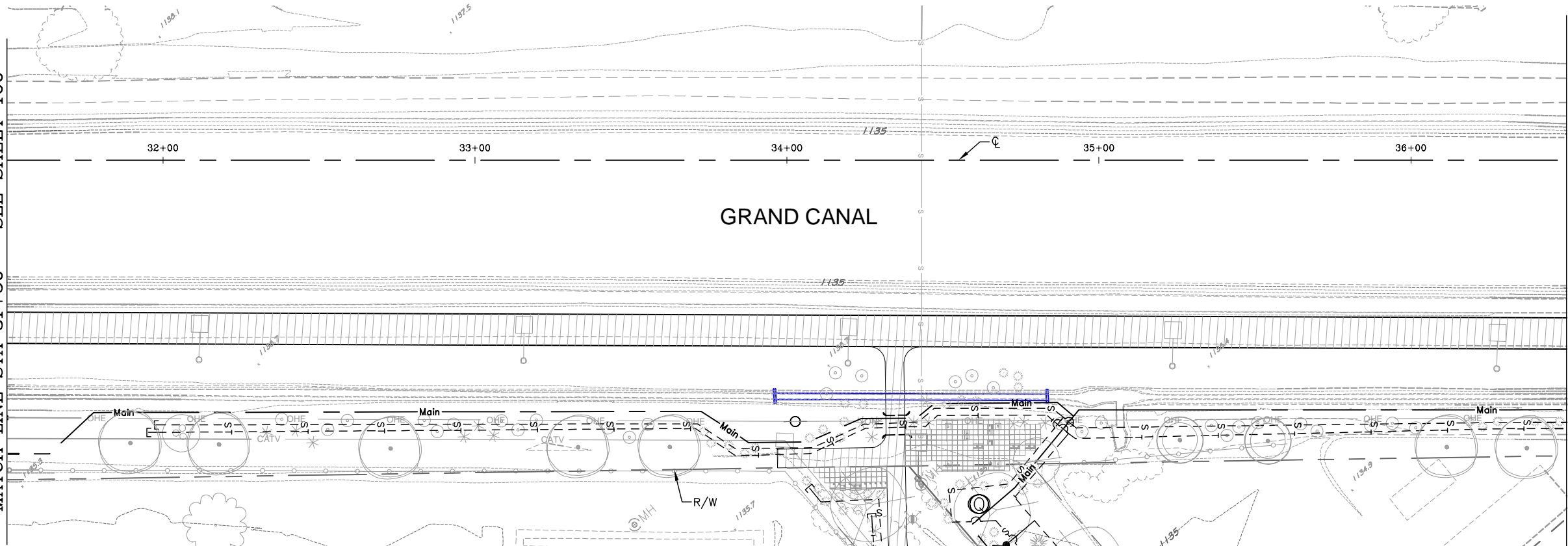
ST87600074, 12/5/16





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MATCH LINE STA 31+50 - SEE SHEET 100



<h1 style="text-align: center;">IRRIGATION PLAN</h1>				
<h2 style="text-align: center;">CITY OF PHOENIX, ARIZONA</h2> <h3 style="text-align: center;">STREET TRANSPORTATION DEPARTMENT</h3>				
<h2 style="text-align: center;">GRAND CANALSCAPE PHASE 1</h2> <h3 style="text-align: center;">UPTOWN AND GATEWAY NORTH</h3> <h3 style="text-align: center;">ST87600074</h3>				
DR: A/A/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			101	153

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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Joel Hormann

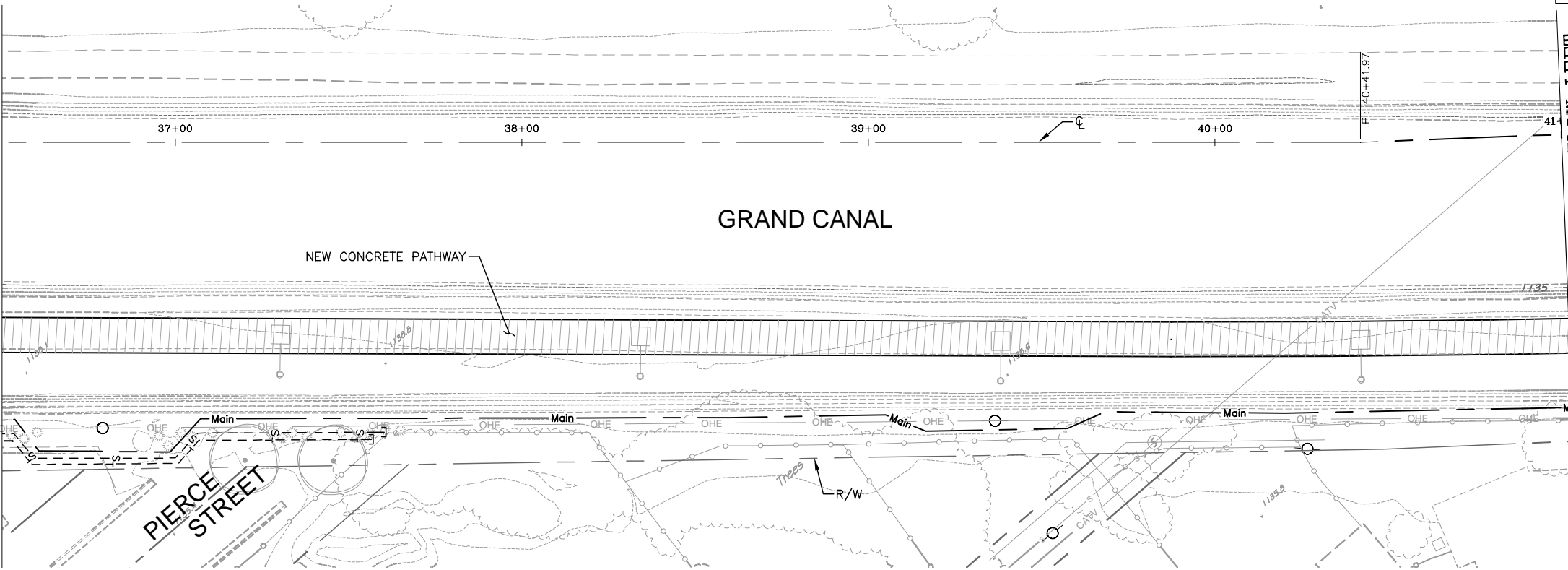
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REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX		REVISION BY CITY OF PHOENIX	
DESCRIPTION		DESCRIPTION		DESCRIPTION	
NO.	REV BY CKD BY DATE	NO.	REV BY CKD BY DATE	NO.	REV BY CKD BY DATE

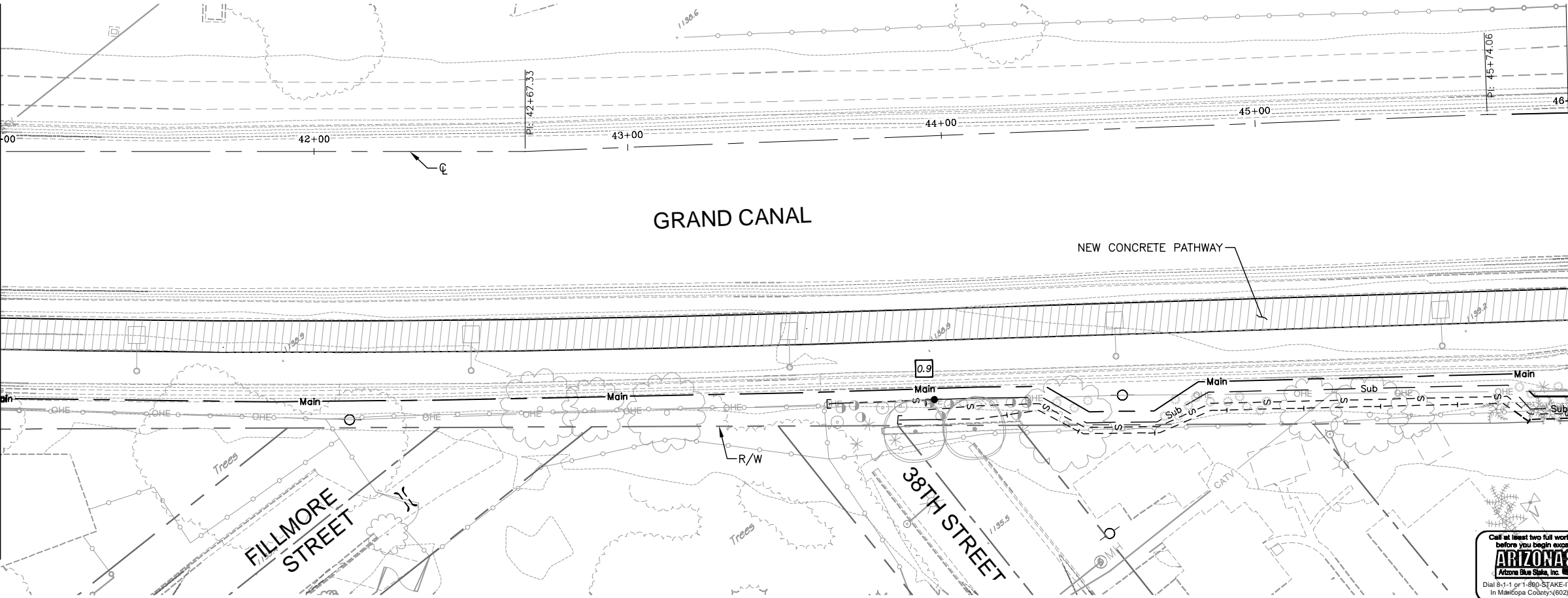
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

MATCH LINE STA 36+50 - SEE SHEET 101



MATCH LINE STA 41+00 - SEE BELOW LEFT

MATCH LINE STA 41+00 - SEE ABOVE RIGHT



MATCH LINE STA 46+00 - SEE SHEET 103



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074	102	153	

**Gavan Barker**  
Civil Engineering - Landscape Architecture  
27433 JOHN E. BARKER  
Arizona 00127 Ph: 602-263-0271 Fx: 602-263-0272  
Expires: 9-30-17

City of Phoenix  
N

DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16
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### IRRIGATION LEGEND

SYMBOL	DESCRIPTION	QTY
—Main—	PVC Main Line (1")	970 L.F.
—Sub—	PVC Sub-Main Line (3/4")	215 L.F.
—T—	PVC Lateral: Trees (1/2")	335 L.F.
—S—	PVC Lateral: Shrubs (1/2")	400 L.F.
( )	3" PVC Irrigation Sleeve	
△	Controller (Electric 6 Station)	-
M	3/4" Water Meter	-
RP	Reduced Pressure Backflow Preventer (1")	-
MV	1" Master Valve	-
FS	Flow Meter (1") w/ Flow Sensor Cable	-
Q	Quick Coupler Valve Assembly	-
◇	1" Electric Valve	-
●	Pressure Regulator Assembly	1
⊠	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	4
(not shown)	Single-Outlet Emitter Assembly: Shrubs	52
—	End Flush Cap	4

A1

→ Station Number

1"

→ Valve Size

6.2

→ Gallons Per Minute

Tree

→ Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

### IRRIGATION PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

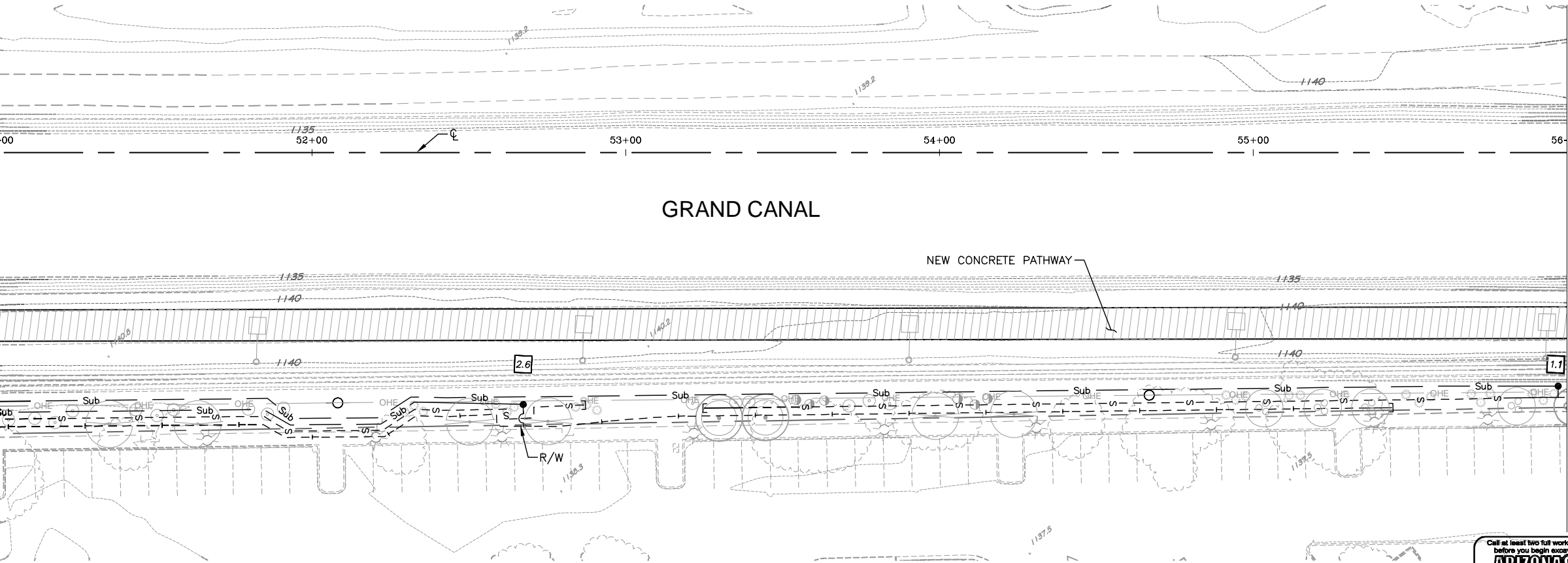
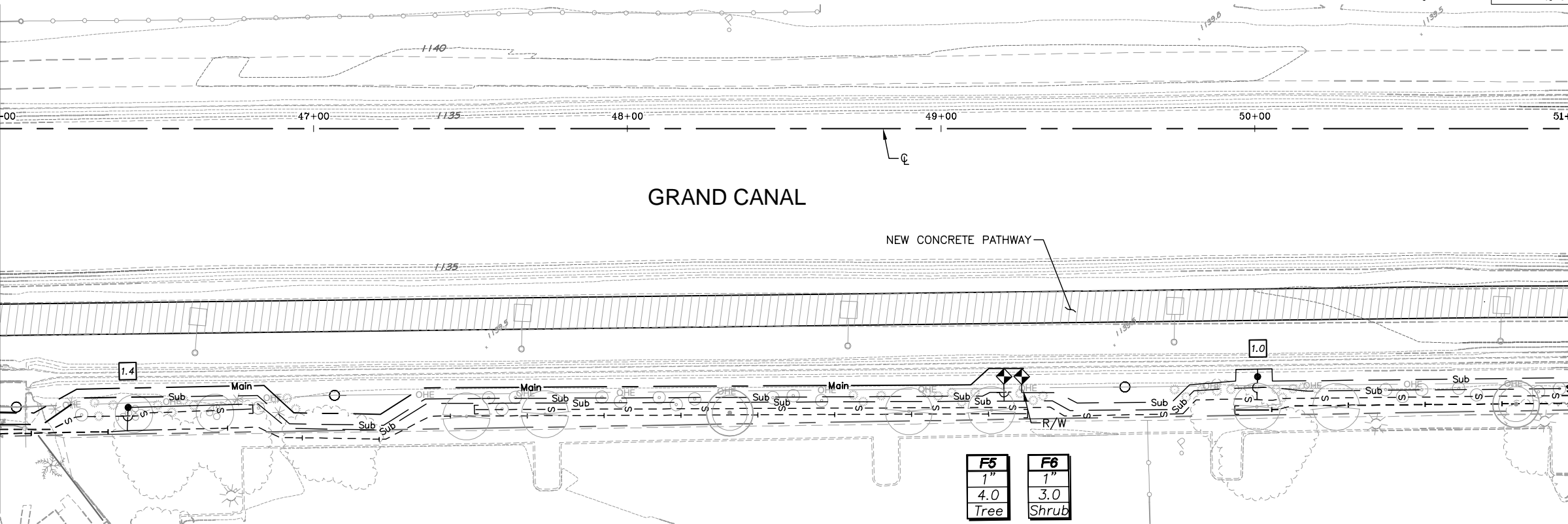
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			102	153

ST87600074, 12/5/16



[illegible]

MATCH LINE STA 46+00 - SEE SHEET 102



 <b>Gavan &amp; Barker Inc.</b> Civil Engineering - Landscape Architecture 3030 North Central Avenue, Suite 1530, Phoenix Arizona 85012 Ph: 602-260-0031 Fx: 602-260-0032			
DES: JEB/JDH	DR: AJA/JDH	CK: JEB	DATE: 12/16

SYMBOL	DESCRIPTION	QTY
	PVC Main Line (1")	340 L.F.
	PVC Sub-Main Line (3/4")	1,670 L.F.
	PVC Lateral: Trees (1/2")	910 L.F.
	PVC Lateral: Shrubs (1/2")	890 L.F.
	3" PVC Irrigation Sleeve	-
	Controller (Electric 6 Station)	-
	3/4" Water Meter	-
	Reduced Pressure Backflow Preventer (1")	-
	1" Master Valve	-
	Flow Meter (1") w/ Flow Sensor Cable	-
	Quick Coupler Valve Assembly	-
	1" Electric Valve	2
	Pressure Regulator Assembly	4
	Pull Box	-
(not shown)	Multi-Outlet Emitter Assembly: Trees	24
(not shown)	Multi-Outlet Emitter Assembly: Shrubs	107
	End Flush Cap	7

<b>A1</b>	← Station Number
1"	← Valve Size
6.2	← Gallons Per Minute
Tree	← Tree / Shrub

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH  
ST87600074

DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			103	153

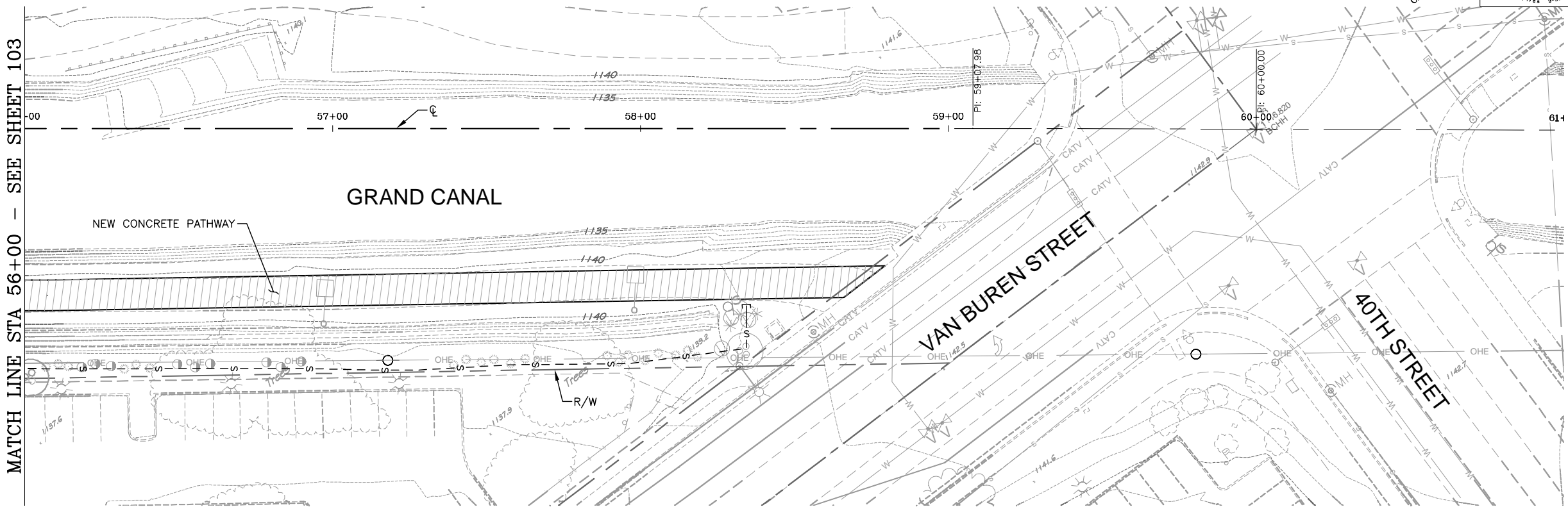
Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

[illegible]

MATCH LINE STA 56+00 - SEE SHEET 103



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IRRIGATION PLAN				
CITY OF PHOENIX, ARIZONA				
STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1				
UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: AJA/JDH	DES: JEB/JDH	CK: JEB	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: 1" = 20' HORIZONTAL			104	153

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

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In Maricopa County: (602) 263-1100



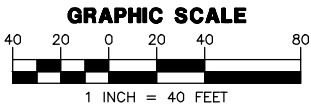


REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



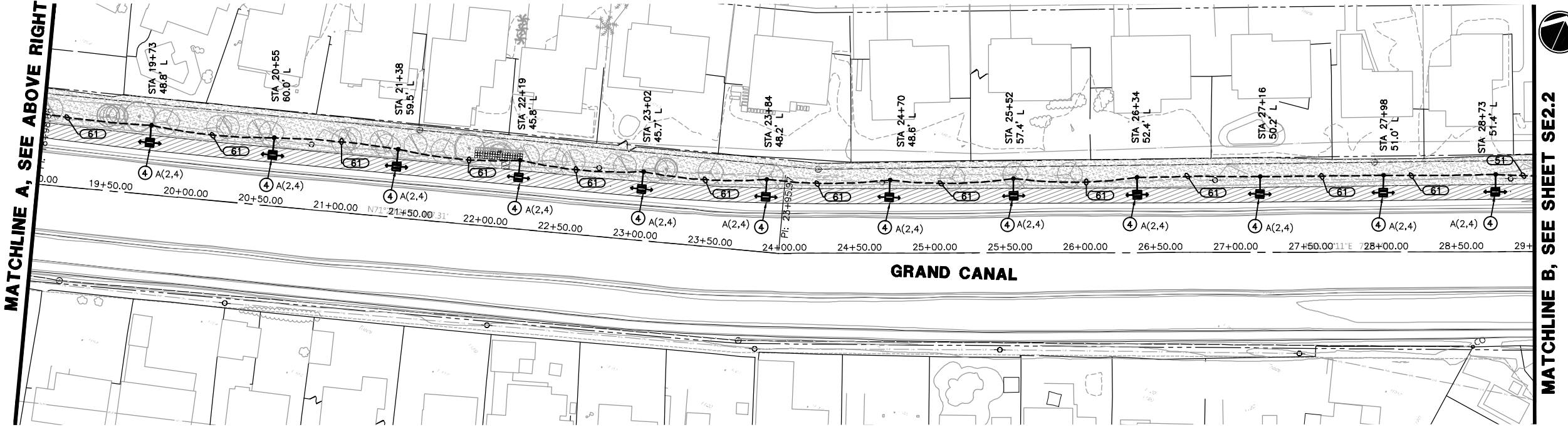
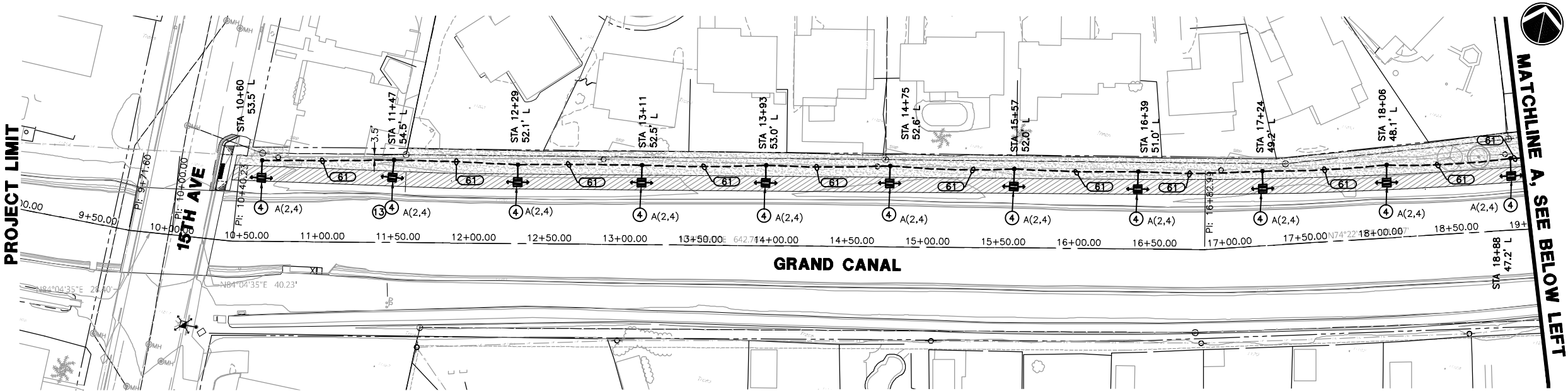
- LEGEND**
- 100 AMP 120/240V 1Ø, 3W METERED ELECTRICAL SERVICE PEDESTAL
  - LED PATHWAY LIGHT, 12' MOUNTING HEIGHT
  - LED PATHWAY LIGHT, 15' MOUNTING HEIGHT
  - EXISTING STREET/AREA LIGHT
  - EXISTING TRAFFIC SIGNAL WITH LUMINAIRE
  - IRRIGATION CONTROLLER
  - UNDERGROUND ELECTRICAL CONDUIT
  - CONCRETE PULL BOX
  - CONCRETE BOLLARD LIGHT
  - SHADE STRUCTURE LIGHT

- CONSTRUCTION NOTES:**
- 100 AMP, 120/240V, 1Ø, 3W, METERED ELECTRICAL PEDESTAL. SEE DETAILS ON SHEET SE3.1.
  - PROPOSED POWER CO. SECONDARY CONDUIT. INSTALL PER POWER CO. REQUIREMENTS AND SPECIFICATIONS. EXTEND FROM PROPOSED TRANSFORMER LOCATION TO PROPOSED ELECTRICAL SERVICE. LOCATIONS SHOWN FOR CONTRACTOR CONVENIENCE ONLY. POWER CO. PLANS WILL DETERMINE EXACT LOCATION OF CONDUIT AND TAKE PRECEDENCE OVER THESE DRAWINGS.
  - LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 15'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
  - LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
  - 42W, LED CONCRETE BOLLARD. SEE DETAIL 5 ON SHEET SE3.3.
  - IRRIGATION CONTROLLER. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL CONDUIT, CONDUCTORS AND CONNECTIONS BETWEEN CONTROLLER AND ELECTRICAL SERVICE. COORDINATE WITH LANDSCAPE PLANS FOR EXACT LOCATION AND DETAILS.
  - CONTRACTOR TO HORIZONTAL BORE UNDER EXISTING ROADWAY, CURB, GUTTER, AND SIDEWALK AS NECESSARY.
  - #3-1/2 CONCRETE PULL BOX, SEE DETAIL 3 ON SHEET SE3.2.
  - (2) LED AREA LIGHT FIXTURES WITH TYPE II DISTRIBUTION AT 180 DEGREE OFFSET ON A CONCRETE POLE, MOUNTED AT A HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
  - 10W LED LIGHT FIXTURE TO BE MOUNTED TO STRUCTURE COLUMN. COORDINATE WITH STRUCTURAL ENGINEER ON MOUNTING HEIGHT AND ORIENTATION. SEE DETAIL 7 ON SHEET SE3.3.
  - 10W LED ART ELEMENT LIGHTING. COORDINATE WITH LANDSCAPE & STRUCTURAL PLANS FOR EXACT LOCATION AND DETAILS. SEE DETAIL 6 ON SHEET SE3.3.
  - EXISTING FIXTURE TO BE REMOVED FROM POWER POLE. COORDINATE WITH THE CITY OF PHOENIX ON DISPOSAL OF FIXTURE.
  - USE CAUTION IN THIS AREA DUE TO EXISTING UNDERGROUND UTILITIES. IF FACE OF POLE IS WITHIN 4' OF FACE OF SEWER PIPE, COORDINATE LOCATION WITH THE CITY OF PHOENIX PRIOR TO INSTALL.

**WRIGHT**  
engineering corporation  
ELECTRICAL ENGINEERING AND DESIGN  
165 EAST CHILTON DRIVE  
CHANDLER, ARIZONA 85225  
PHONE: 480.497.5829  
FAX: 480.497.5807  
www.wrightengr.com  
Wright Project # 15177

Professional Engineer  
57159  
CLIFFORD M. TOLMAN  
Date Signed: 12-14-17  
Expires: 3-31-17

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	106	153
<b>TY LIN INTERNATIONAL</b> engineers   planners   scientists CONSULTING ENGINEER				
DES: DVG	DR: DVG	CK: CMT	DATE: 12/16	



Call at least two full working days before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.  
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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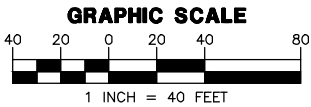
ELECTRICAL SITE PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DVG DATE: 12/16	DES: CMT DATE: 12/16	CK: CMT DATE: 12/16	SHEET NO: 106	TOTAL SHEETS: 153
SCALE: N.T.S.			<b>SE2.1</b>	

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

REVISION BY CITY OF PHOENIX		NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX		NO.	DESCRIPTION	REV BY	CHK BY	DATE

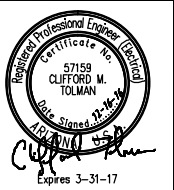
REVISION BY CITY OF PHOENIX		NO.	DESCRIPTION	REV BY	CHK BY	DATE



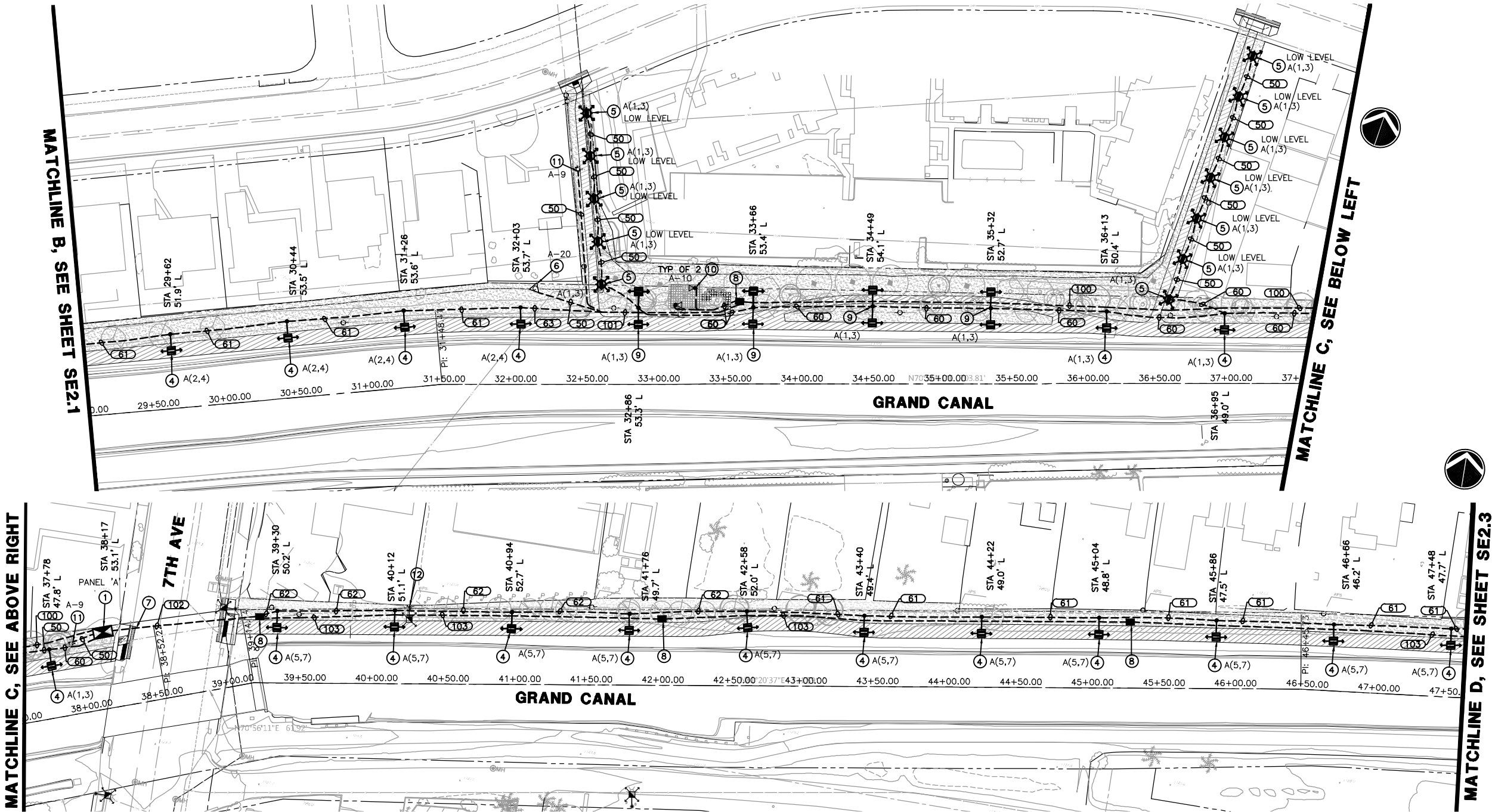
- LEGEND**
- 100 AMP 120/240V 1Ø, 3W METERED ELECTRICAL SERVICE PEDESTAL
  - LED PATHWAY LIGHT, 12' MOUNTING HEIGHT
  - LED PATHWAY LIGHT, 15' MOUNTING HEIGHT
  - EXISTING STREET/AREA LIGHT
  - EXISTING TRAFFIC SIGNAL WITH LUMINAIRE
  - IRRIGATION CONTROLLER
  - UNDERGROUND ELECTRICAL CONDUIT
  - CONCRETE PULL BOX
  - CONCRETE BOLLARD LIGHT
  - SHADE STRUCTURE LIGHT

- CONSTRUCTION NOTES:**
- 100 AMP, 120/240V, 1Ø, 3W, METERED ELECTRICAL PEDESTAL. SEE DETAILS ON SHEET SE3.1.
  - PROPOSED POWER CO. SECONDARY CONDUIT. INSTALL PER POWER CO. REQUIREMENTS AND SPECIFICATIONS. EXTEND FROM PROPOSED TRANSFORMER LOCATION TO PROPOSED ELECTRICAL SERVICE. LOCATIONS SHOWN FOR CONTRACTOR CONVENIENCE ONLY. POWER CO. PLANS WILL DETERMINE EXACT LOCATION OF CONDUIT AND TAKE PRECEDENCE OVER THESE DRAWINGS.
  - LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 15'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
  - LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
  - 42W, LED CONCRETE BOLLARD. SEE DETAIL 5 ON SHEET SE3.3.
  - IRRIGATION CONTROLLER. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL CONDUIT, CONDUCTORS AND CONNECTIONS BETWEEN CONTROLLER AND ELECTRICAL SERVICE. COORDINATE WITH LANDSCAPE PLANS FOR EXACT LOCATION AND DETAILS.
  - CONTRACTOR TO HORIZONTAL BORE UNDER EXISTING ROADWAY, CURB, GUTTER, AND SIDEWALK AS NECESSARY.
  - #3-1/2 CONCRETE PULL BOX, SEE DETAIL 3 ON SHEET SE3.2.
  - (2) LED AREA LIGHT FIXTURES WITH TYPE II DISTRIBUTION AT 180 DEGREE OFFSET ON A CONCRETE POLE, MOUNTED AT A HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
  - 10W LED LIGHT FIXTURE TO BE MOUNTED TO STRUCTURE COLUMN. COORDINATE WITH STRUCTURAL ENGINEER ON MOUNTING HEIGHT AND ORIENTATION. SEE DETAIL 7 ON SHEET SE3.3.
  - 10W LED ART ELEMENT LIGHTING. COORDINATE WITH LANDSCAPE & STRUCTURAL PLANS FOR EXACT LOCATION AND DETAILS. SEE DETAIL 6 ON SHEET SE3.3.
  - EXISTING FIXTURE TO BE REMOVED FROM POWER POLE. COORDINATE WITH THE CITY OF PHOENIX ON DISPOSAL OF FIXTURE.
  - USE CAUTION IN THIS AREA DUE TO EXISTING UNDERGROUND UTILITIES. IF FACE OF POLE IS WITHIN 4' OF FACE OF SEWER PIPE, COORDINATE LOCATION WITH THE CITY OF PHOENIX PRIOR TO INSTALL.

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Wright Project # 15177



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	107	153
<b>TY. LIN INTERNATIONAL</b> engineers   planners   scientists		T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: DVG	DR: DVG	CK: CMT	DATE: 12/16	



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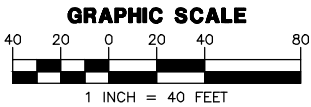
ELECTRICAL SITE PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DVG DATE: 12/16	DES: CMT DATE: 12/16	CK: CMT DATE: 12/16	SHEET NO: 107	TOTAL SHEETS: 153
SCALE: N.T.S.			<b>SE2.2</b>	

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

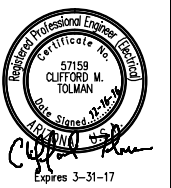
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



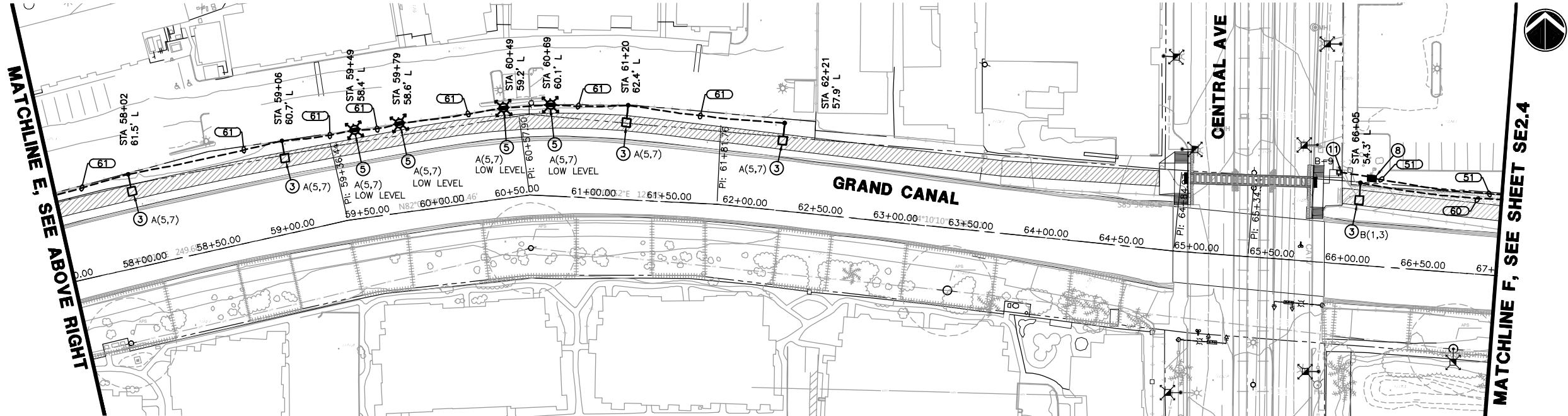
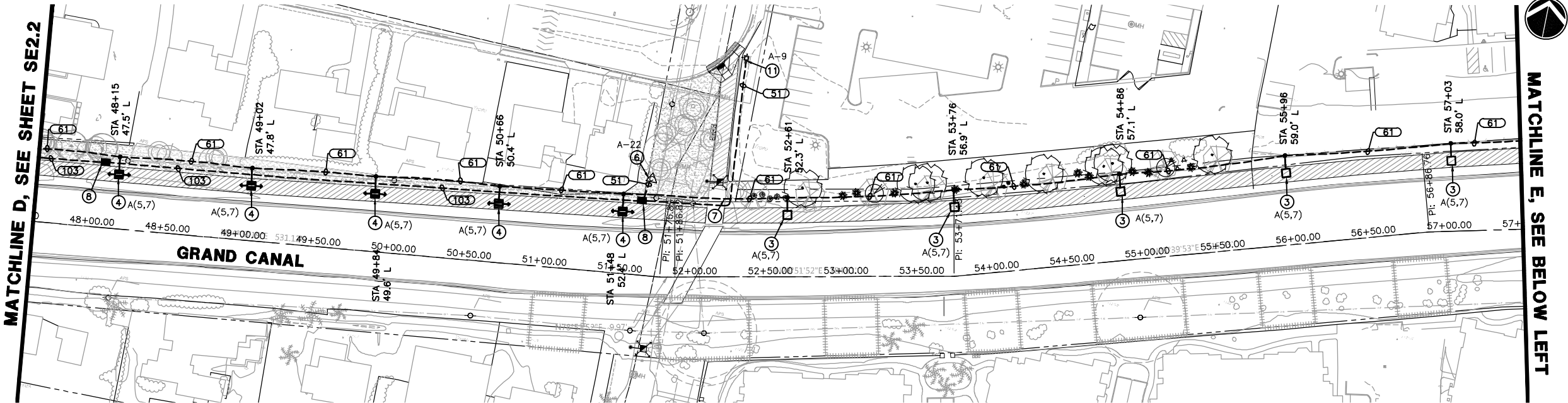
- LEGEND**
- 100 AMP 120/240V 1Ø, 3W METERED ELECTRICAL SERVICE PEDESTAL
  - LED PATHWAY LIGHT, 12' MOUNTING HEIGHT
  - LED PATHWAY LIGHT, 15' MOUNTING HEIGHT
  - EXISTING STREET/AREA LIGHT
  - EXISTING TRAFFIC SIGNAL WITH LUMINAIRE
  - IRRIGATION CONTROLLER
  - UNDERGROUND ELECTRICAL CONDUIT
  - CONCRETE PULL BOX
  - CONCRETE BOLLARD LIGHT
  - SHADE STRUCTURE LIGHT

- CONSTRUCTION NOTES:**
- 100 AMP, 120/240V, 1Ø, 3W, METERED ELECTRICAL PEDESTAL. SEE DETAILS ON SHEET SE3.1.
  - PROPOSED POWER CO. SECONDARY CONDUIT. INSTALL PER POWER CO. REQUIREMENTS AND SPECIFICATIONS. EXTEND FROM PROPOSED TRANSFORMER LOCATION TO PROPOSED ELECTRICAL SERVICE. LOCATIONS SHOWN FOR CONTRACTOR CONVENIENCE ONLY. POWER CO. PLANS WILL DETERMINE EXACT LOCATION OF CONDUIT AND TAKE PRECEDENCE OVER THESE DRAWINGS.
  - LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 15'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
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  - CONTRACTOR TO HORIZONTAL BORE UNDER EXISTING ROADWAY, CURB, GUTTER, AND SIDEWALK AS NECESSARY.
  - #3-1/2 CONCRETE PULL BOX, SEE DETAIL 3 ON SHEET SE3.2.
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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	108	153
<b>TY LIN INTERNATIONAL</b> engineers   planners   scientists CONSULTING ENGINEER				
DES: DVG	DR: DVG	CK: CMT	DATE: 12/16	



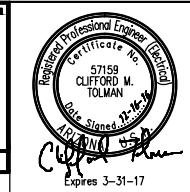
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ELECTRICAL SITE PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DVG DATE: 12/16	DES: CMT DATE: 12/16	CK: CMT DATE: 12/16	SHEET NO: 108	TOTAL SHEETS: 153
SCALE: N.T.S.			<b>SE2.3</b>	

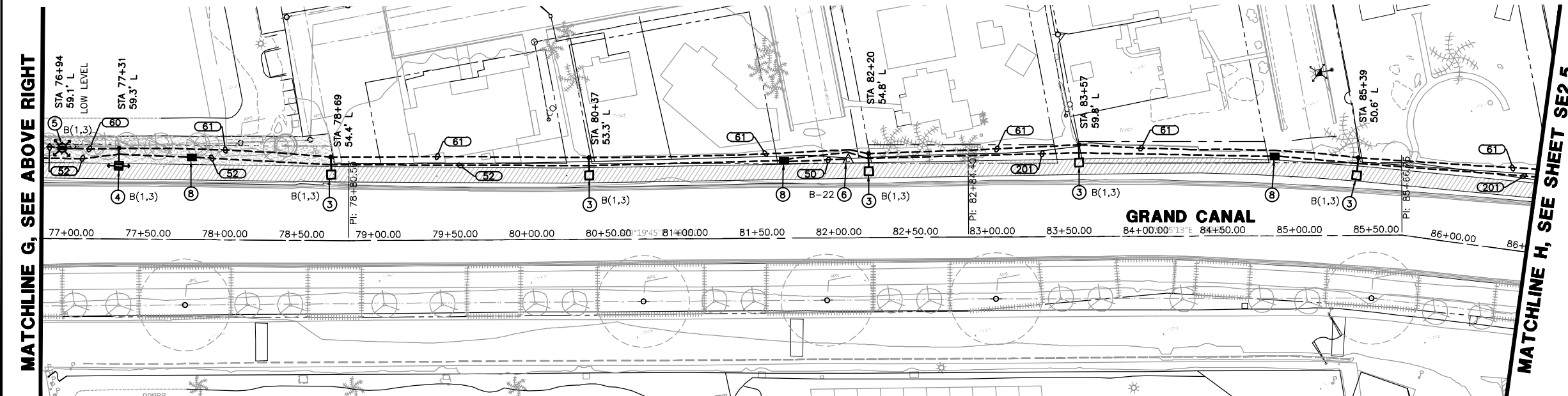
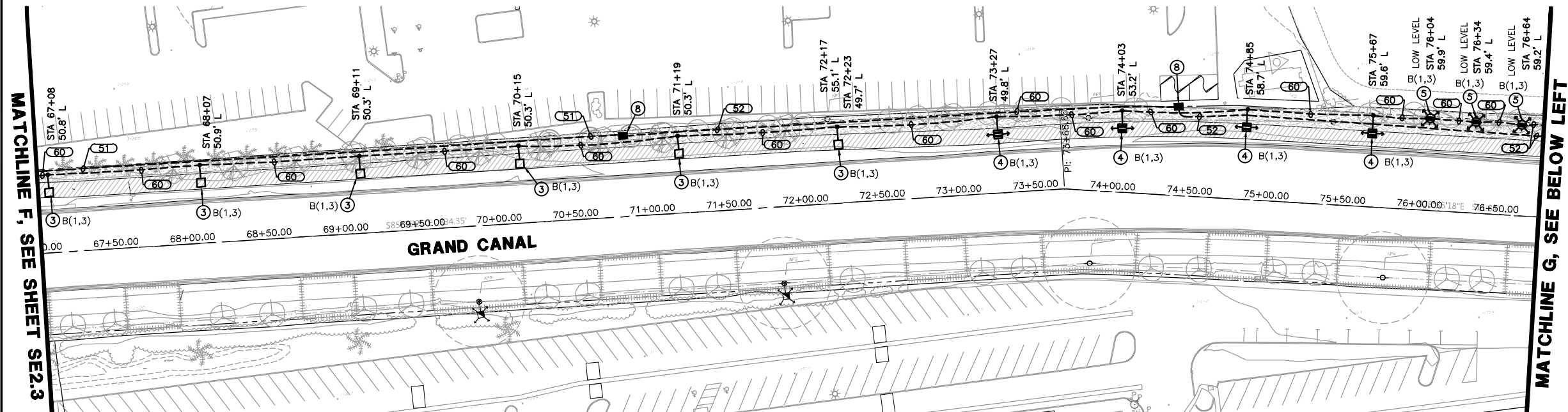
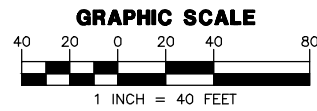
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

- |   |  |
|---|--|
|  | 100 AMP 120/240V 1Ø, 3W METERED<br>ELECTRICAL SERVICE PEDESTAL |
|  | LED PATHWAY LIGHT, 12' MOUNTING HEIGHT                         |
|  | LED PATHWAY LIGHT, 15' MOUNTING HEIGHT                         |
|  | EXISTING STREET/AREA LIGHT                                     |
|  | EXISTING TRAFFIC SIGNAL WITH LUMINAIRE                         |
|  | IRRIGATION CONTROLLER  |
|  | UNDERGROUND ELECTRICAL CONDUIT                                 |
|  | CONCRETE PULL BOX  |
|  | CONCRETE BOLLARD LIGHT   |
|  | SHADE STRUCTURE LIGHT  |

- ① 100 AMP, 120/240V, 1 $\phi$ , 3W, METERED ELECTRICAL PEDESTAL. SEE DETAILS ON SHEET SE3.1.
- ② PROPOSED POWER CO. SECONDARY CONDUIT. INSTALL PER POWER CO. REQUIREMENTS AND SPECIFICATIONS. EXTEND FROM PROPOSED TRANSFORMER LOCATION TO PROPOSED ELECTRICAL SERVICE. LOCATIONS SHOWN FOR CONTRACTOR CONVENIENCE ONLY. POWER CO. PLANS WILL DETERMINE EXACT LOCATION OF CONDUIT AND TAKE PRECEDENCE OVER THESE DRAWINGS.
- ③ LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 15'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
- ④ LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
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- ⑨ (2) LED AREA LIGHT FIXTURES WITH TYPE II DISTRIBUTION AT 180 DEGREE OFFSET ON A CONCRETE POLE, MOUNTED AT A HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
- ⑩ 10W LED LIGHT FIXTURE TO BE MOUNTED TO STRUCTURE COLUMN. COORDINATE WITH STRUCTURAL ENGINEER ON MOUNTING HEIGHT AND ORIENTATION. SEE DETAIL 7 ON SHEET SE3.3.
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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	109	153
<b>TY. LIN INTERNATIONAL</b> <b>engineers   planners   scientists</b>			<b>T.Y. LIN INTERNATIONAL</b> <b>CONSULTING ENGINEER</b>	
DES: DVG	DR: DVG	CK: CMT	DATE: 12/16	

[illegible][illegible][illegible]

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ELECTRICAL SITE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: DVG	DES: CMT	CK: CMT	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: N.T.S.		<b>SE2.4</b>	109	153



GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

DR: DVG	DES: CMT	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16		
SCALE: N.T.S.		<b>SE2.5</b>	110	153

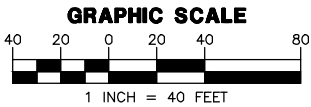
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FCC

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

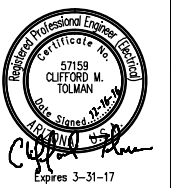
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



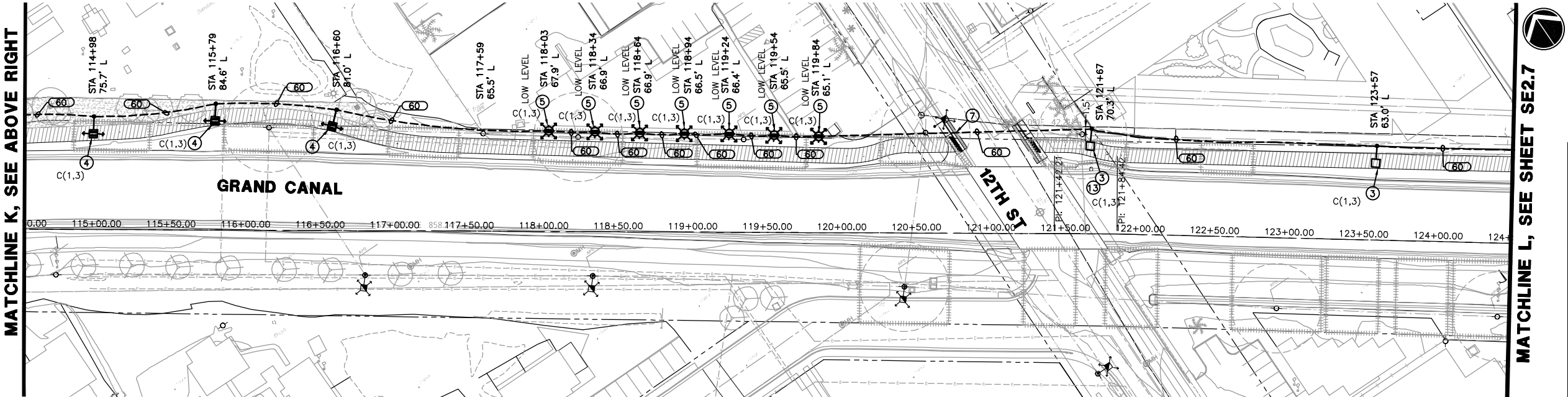
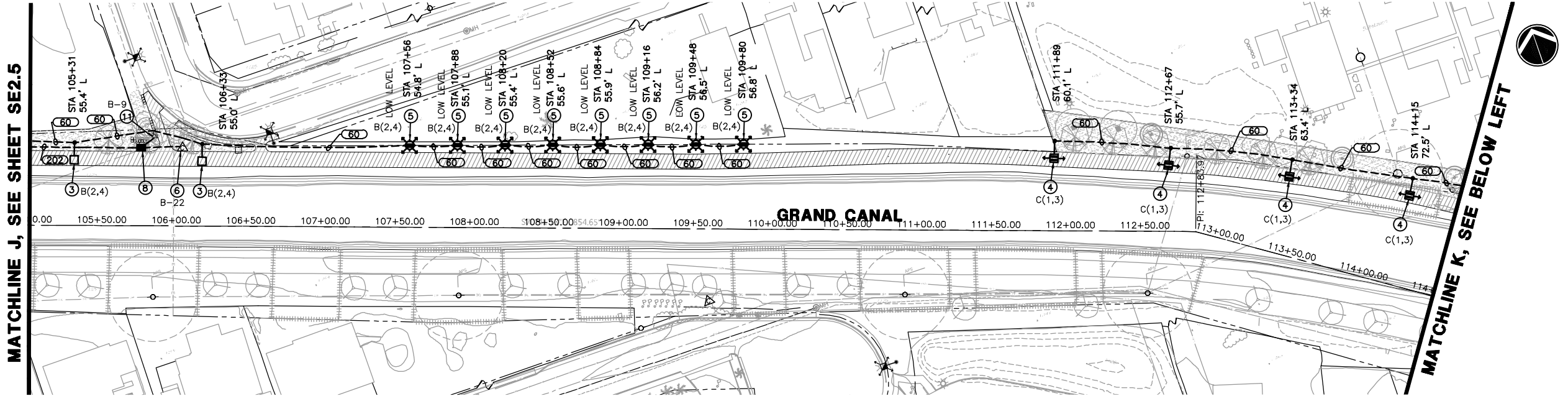
- LEGEND**
- 100 AMP 120/240V 1Ø, 3W METERED ELECTRICAL SERVICE PEDESTAL
  - LED PATHWAY LIGHT, 12' MOUNTING HEIGHT
  - LED PATHWAY LIGHT, 15' MOUNTING HEIGHT
  - EXISTING STREET/AREA LIGHT
  - EXISTING TRAFFIC SIGNAL WITH LUMINAIRE
  - IRRIGATION CONTROLLER
  - UNDERGROUND ELECTRICAL CONDUIT
  - CONCRETE PULL BOX
  - CONCRETE BOLLARD LIGHT
  - SHADE STRUCTURE LIGHT

- CONSTRUCTION NOTES:**
- 100 AMP, 120/240V, 1Ø, 3W, METERED ELECTRICAL PEDESTAL. SEE DETAILS ON SHEET SE3.1.
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  - LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 15'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
  - LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
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  - (2) LED AREA LIGHT FIXTURES WITH TYPE II DISTRIBUTION AT 180 DEGREE OFFSET ON A CONCRETE POLE, MOUNTED AT A HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
  - 10W LED LIGHT FIXTURE TO BE MOUNTED TO STRUCTURE COLUMN. COORDINATE WITH STRUCTURAL ENGINEER ON MOUNTING HEIGHT AND ORIENTATION. SEE DETAIL 7 ON SHEET SE3.3.
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Wright Project # 15177



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	111	153
<b>TY LIN INTERNATIONAL</b> engineers   planners   scientists CONSULTING ENGINEER				
DES: DVG	DR: DVG	CK: CMT	DATE: 12/16	



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ELECTRICAL SITE PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DVG DATE: 12/16	DES: CMT DATE: 12/16	CK: CMT DATE: 12/16	SHEET NO: 111	TOTAL SHEETS 153
SCALE: N.T.S.			<b>SE2.6</b>	



REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

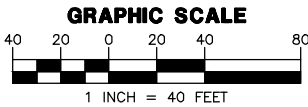
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

LEGEND

- 100 AMP 120/240V 1Ø, 3W METERED ELECTRICAL SERVICE PEDESTAL
- LED PATHWAY LIGHT, 12' MOUNTING HEIGHT
- LED PATHWAY LIGHT, 15' MOUNTING HEIGHT
- EXISTING STREET/AREA LIGHT
- EXISTING TRAFFIC SIGNAL WITH LUMINAIRE
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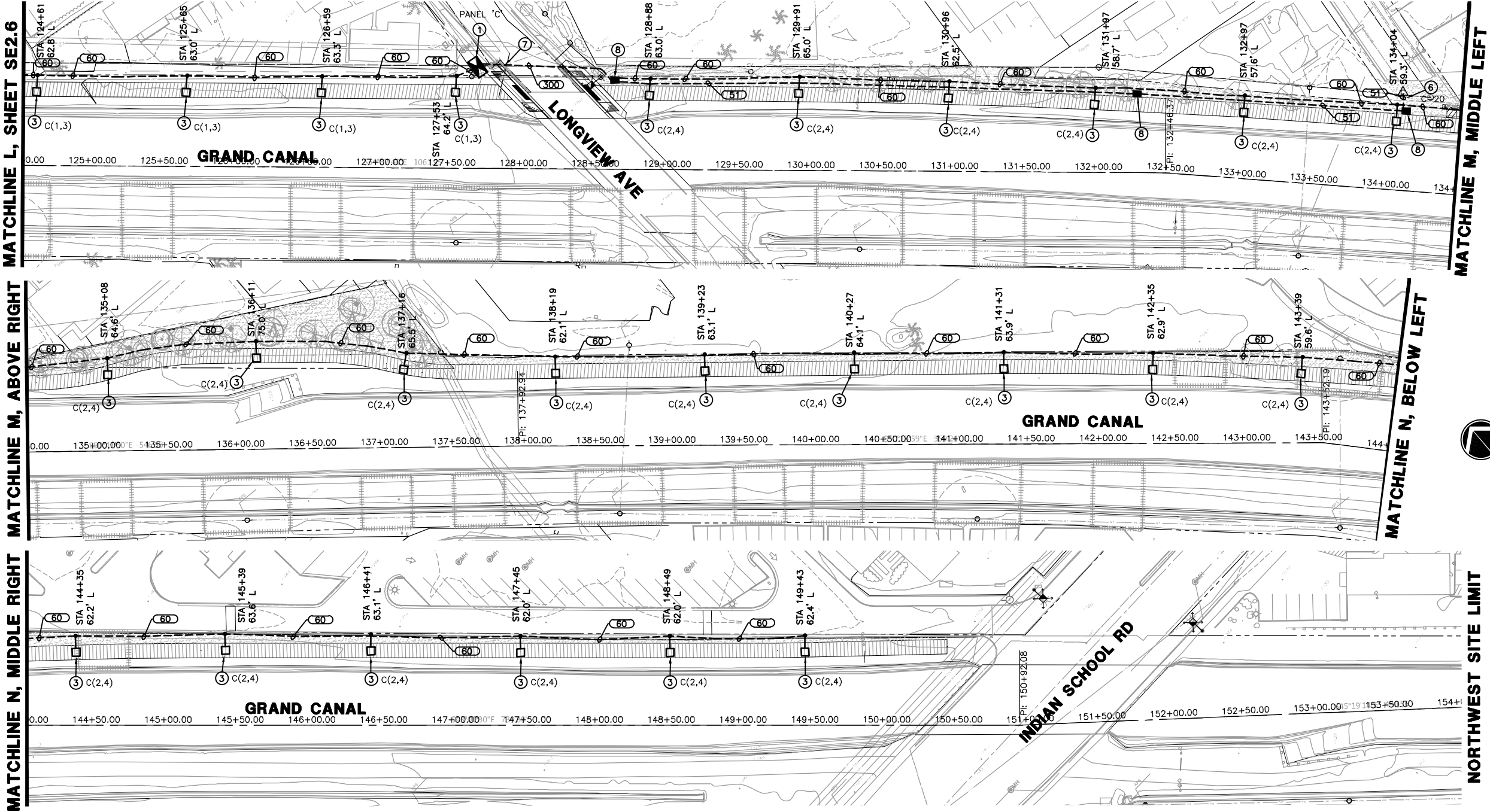
CONSTRUCTION NOTES:

- 100 AMP, 120/240V, 1Ø, 3W, METERED ELECTRICAL PEDESTAL. SEE DETAILS ON SHEET SE3.1.
- PROPOSED POWER CO. SECONDARY CONDUIT. INSTALL PER POWER CO. REQUIREMENTS AND SPECIFICATIONS. EXTEND FROM PROPOSED TRANSFORMER LOCATION TO PROPOSED ELECTRICAL SERVICE. LOCATIONS SHOWN FOR CONTRACTOR CONVENIENCE ONLY. POWER CO. PLANS WILL DETERMINE EXACT LOCATION OF CONDUIT AND TAKE PRECEDENCE OVER THESE DRAWINGS.
- LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 15'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
- LED AREA LIGHT FIXTURE WITH TYPE II DISTRIBUTION ON A CONCRETE POLE MOUNTED AT A FIXTURE HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
- 42W, LED CONCRETE BOLLARD. SEE DETAIL 5 ON SHEET SE3.3.
- IRRIGATION CONTROLLER. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ELECTRICAL CONDUIT, CONDUCTORS AND CONNECTIONS BETWEEN CONTROLLER AND ELECTRICAL SERVICE. COORDINATE WITH LANDSCAPE PLANS FOR EXACT LOCATION AND DETAILS.
- CONTRACTOR TO HORIZONTAL BORE UNDER EXISTING ROADWAY, CURB, GUTTER, AND SIDEWALK AS NECESSARY.
- #3-1/2 CONCRETE PULL BOX, SEE DETAIL 3 ON SHEET SE3.2.
- (2) LED AREA LIGHT FIXTURES WITH TYPE II DISTRIBUTION AT 180 DEGREE OFFSET ON A CONCRETE POLE, MOUNTED AT A HEIGHT OF 12'-0" AFG. SEE DETAIL 4 ON SHEET SE3.3.
- 10W LED LIGHT FIXTURE TO BE MOUNTED TO STRUCTURE COLUMN. COORDINATE WITH STRUCTURAL ENGINEER ON MOUNTING HEIGHT AND ORIENTATION. SEE DETAIL 7 ON SHEET SE3.3.
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**WRIGHT**  
engineering corporation  
ELECTRICAL ENGINEERING AND DESIGN  
165 EAST CHILTON DRIVE  
CHANDLER, ARIZONA 85225  
PHONE: 480.497.5829  
FAX: 480.497.5807  
www.wrightengr.com  
Wright Project # 15177

Professional Engineer  
57159  
CLIFFORD M. TOLMAN  
Date Signed: 12-14-17  
Expires 3-31-17

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	112	153
TV LIN INTERNATIONAL		T.Y.LIN INTERNATIONAL		
engineers   planners   scientists		CONSULTING ENGINEER		
DES: DVG	DR: DVG	CK: CMT	DATE: 12/16	



Call at least two full working days before you begin excavation.

**ARIZONA811**  
Arizona Blue Stake, Inc.  
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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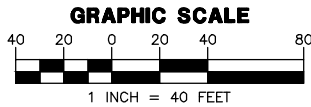
ELECTRICAL SITE PLAN				
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
ST87600074				
DR: DVG DATE: 12/16	DES: CMT DATE: 12/16	CK: CMT DATE: 12/16	SHEET NO: 112	TOTAL SHEETS: 153
SCALE: N.T.S.			<b>SE2.7</b>	

[illegible]

GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

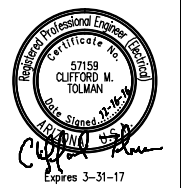


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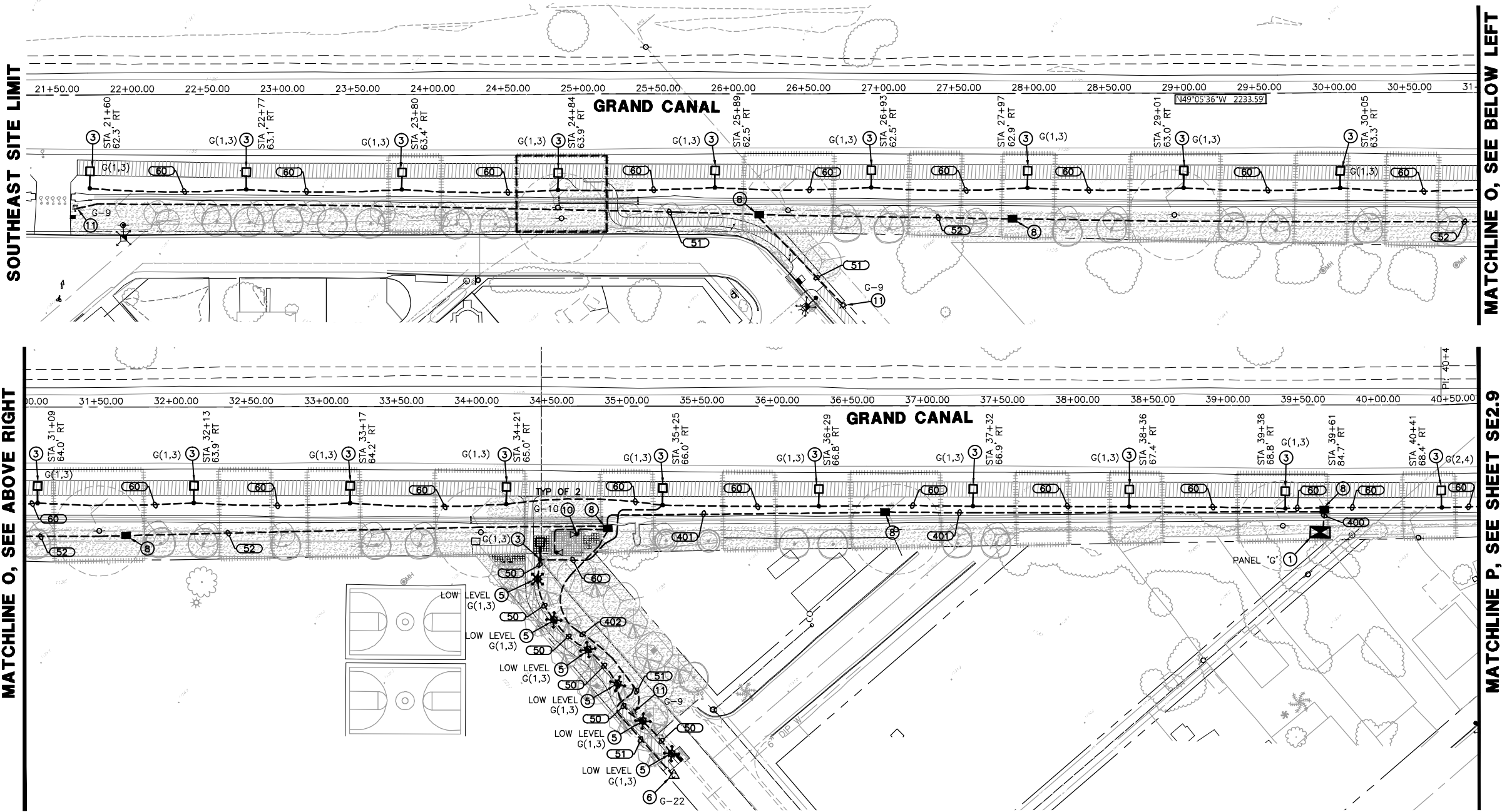
**WRIGHT**  
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Wright Project # 15177



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	113	153
<b>TY. LIN INTERNATIONAL</b> <b>engineers   planners   scientists</b>			<b>T.Y. LIN INTERNATIONAL</b> <b>CONSULTING ENGINEER</b>	
DES: DVG		DR: DVG	CK: CMT	DATE: 12/16



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# ELECTRICAL SITE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074











DR: DVG	DES: CMT	CK: CMT	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: N.T.S.		<b>SE2.8</b>	113	153

all at least two full working days  
before you begin excavation.

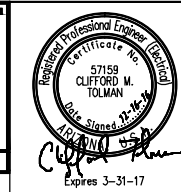
**ARIZONA 811**  
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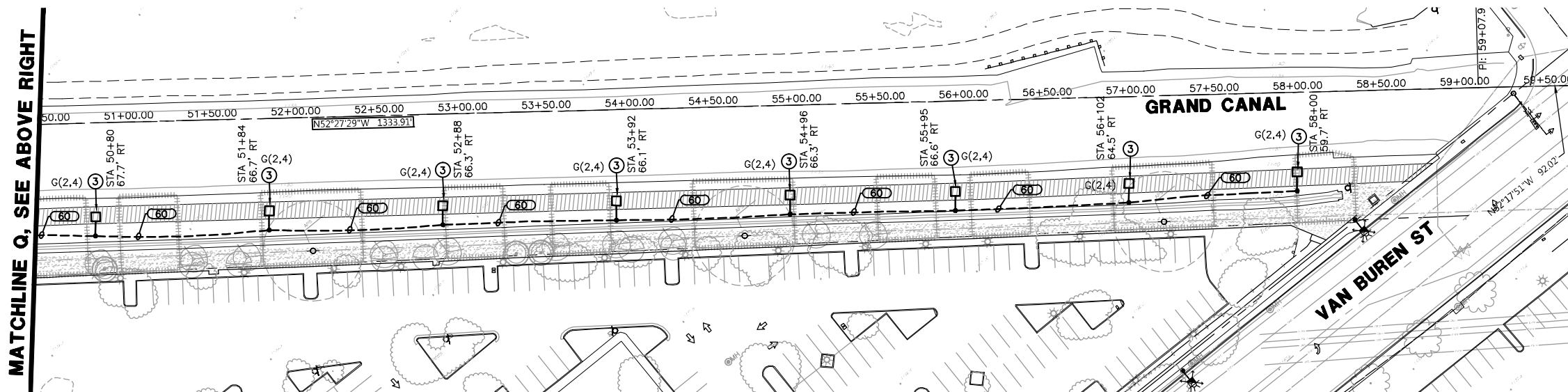
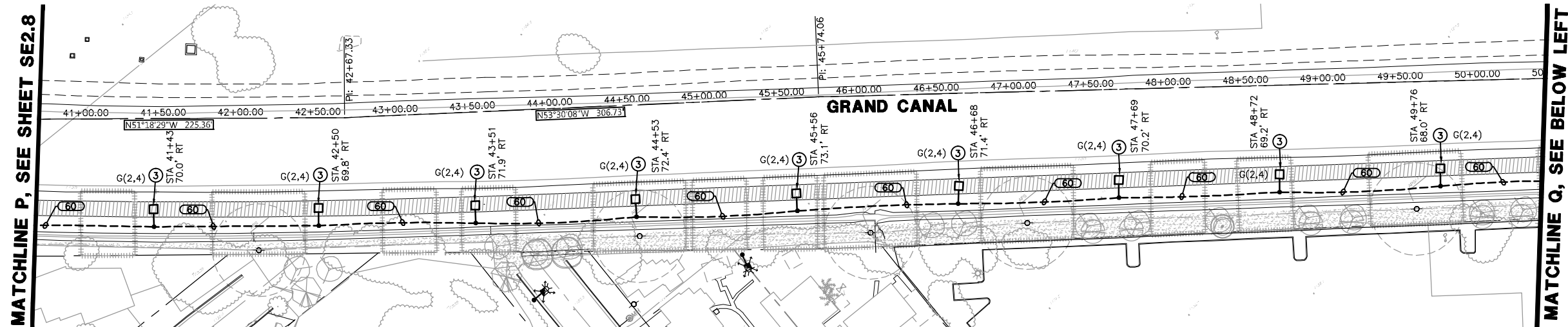
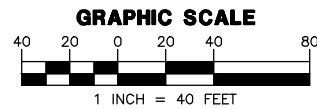
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

-  100 AMP 120/240V 1Ø, 3W METERED ELECTRICAL SERVICE PEDESTAL  
 LED PATHWAY LIGHT, 12' MOUNTING HEIGHT  
 LED PATHWAY LIGHT, 15' MOUNTING HEIGHT  
 EXISTING STREET/AREA LIGHT  
 EXISTING TRAFFIC SIGNAL WITH LUMINAIRE  
 IRRIGATION CONTROLLER  
 UNDERGROUND ELECTRICAL CONDUIT  
 CONCRETE PULL BOX  
 CONCRETE BOLLARD LIGHT  
 SHADE STRUCTURE LIGHT

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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	114	153
<b>TY. LIN INTERNATIONAL</b>				
engineers   planners   scientists		T.Y.LIN INTERNATIONAL CONSULTING ENGINEER		
DES: DVG	DR: DVG	CK: CMT	DATE: 12/16	

[illegible][illegible][illegible]

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ELECTRICAL SITE PLAN

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: DVG	DES: CMT	CK: CMT	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: N.T.S.		<b>SE2.9</b>	114	153



CONDUIT		WIRE			REMARKS
NO.	SIZE	POWER	GROUND	TYPE*	(CKT #)
50	1"	2-#12	1-#12	CU	TYP.
51	1"	2-#10	1-#10	CU	TYP.
52	1"	2-#8	1-#8	CU	TYP.
53	1"	2-#6	1-#6	CU	TYP.
54	1"	2-#4	1-#4	CU	TYP.
55	1"	2-#2	1-#2	CU	TYP.
60	1"	2-#12	1-#12	CU	LOW LIGHT LEVEL
		2-#12		CU	HIGH LIGHT LEVEL
		2-#10		CU	LOW LIGHT LEVEL
61	1"	2-#10	1-#10	CU	HIGH LIGHT LEVEL
		2-#10		CU	LOW LIGHT LEVEL
62	1"	2-#8	1-#8	CU	LOW LIGHT LEVEL
		2-#8		CU	HIGH LIGHT LEVEL
63	1"	2-#6	1-#6	CU	LOW LIGHT LEVEL
		2-#6		CU	HIGH LIGHT LEVEL
100	2"	2-#4	1-#4	CU	A(2,4) HIGH LEVEL
		2-#4		CU	A(2,4) LOW LEVEL
		2-#10		CU	A-10
		2-#10		CU	A-20
101	1.5"	2-#6	1-#6	CU	A(2,4) HIGH LEVEL
		2-#6		CU	A(2,4) LOW LEVEL
		2-#10		CU	A-20
102	1.5"	2-#6	1-#6	CU	A(5,7) HIGH LEVEL
		2-#6		CU	A(5,7) LOW LEVEL
		2-#10		CU	A-9
		2-#8		CU	A-22
103	1"	PULL ROPE	1-#8		SPARE
		2-#10		CU	A-9
		2-#8		CU	A-22
200	1.5"	2-#6	1-#6	CU	B(2,4) HIGH LEVEL
		2-#6		CU	B(2,4) LOW LEVEL
		2-#8		CU	B-9
		PULL ROPE			SPARE
201	1"	2-#8	1-#8	CU	B-9
		2-#10		CU	B-22
202	1"	2-#10	1-#10	CU	B-9
		2-#10		CU	B-22
300	1.5"	2-#6	1-#6	CU	C(2,4) HIGH LEVEL
		2-#6		CU	C(2,4) LOW LEVEL
		2-#8		CU	C-20
		PULL ROPE			SPARE
400	2"	2-#6	1-#6	CU	G(1,3) HIGH LEVEL
		2-#6		CU	G(1,3) LOW LEVEL
		2-#6		CU	G(2,4) HIGH LEVEL
		2-#6		CU	G(2,4) LOW LEVEL
		2-#6		CU	G-10
401	1.5"	PULL ROPE	1-#8		SPARE
		2-#8		CU	G-9
		2-#10		CU	G-10
402	1.5"	2-#10	1-#8	CU	G-22
		2-#8		CU	G-9
		2-#10		CU	G-22

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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

ST87600074

DR: DVG	DES: CMT	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16		
SCALE: N.T.S.		<b>SE3.2</b>	116	153

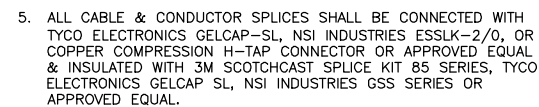


1. THIS CIRCUIT TO BE ACTIVATED FROM DUSK TO DAWN.
2. THIS CIRCUIT TO BE ACTIVATED AT DUSK AND SHUT OFF AT 10:30 PM.



DATA TABLE						
PULLBOX TYPE	PULLBOX LENGTH	PULLBOX WIDTH	PULLBOX HEIGHT	LID LENGTH	LID WIDTH	LID HEIGHT
	"A"	"B"	"C"	"D"	"E"	"F"
#3 1/2	19-3/4"	14-1/4"	12"	15-1/4"	10"	1-3/4"
#5	25-1/4"	15-3/4"	12"	20-5/8"	10-1/2"	2"
#7	34-3/4"	21-3/4"	12"	30-1/8"	17-5/8"	2"

## NO SCALE





REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHKD BY

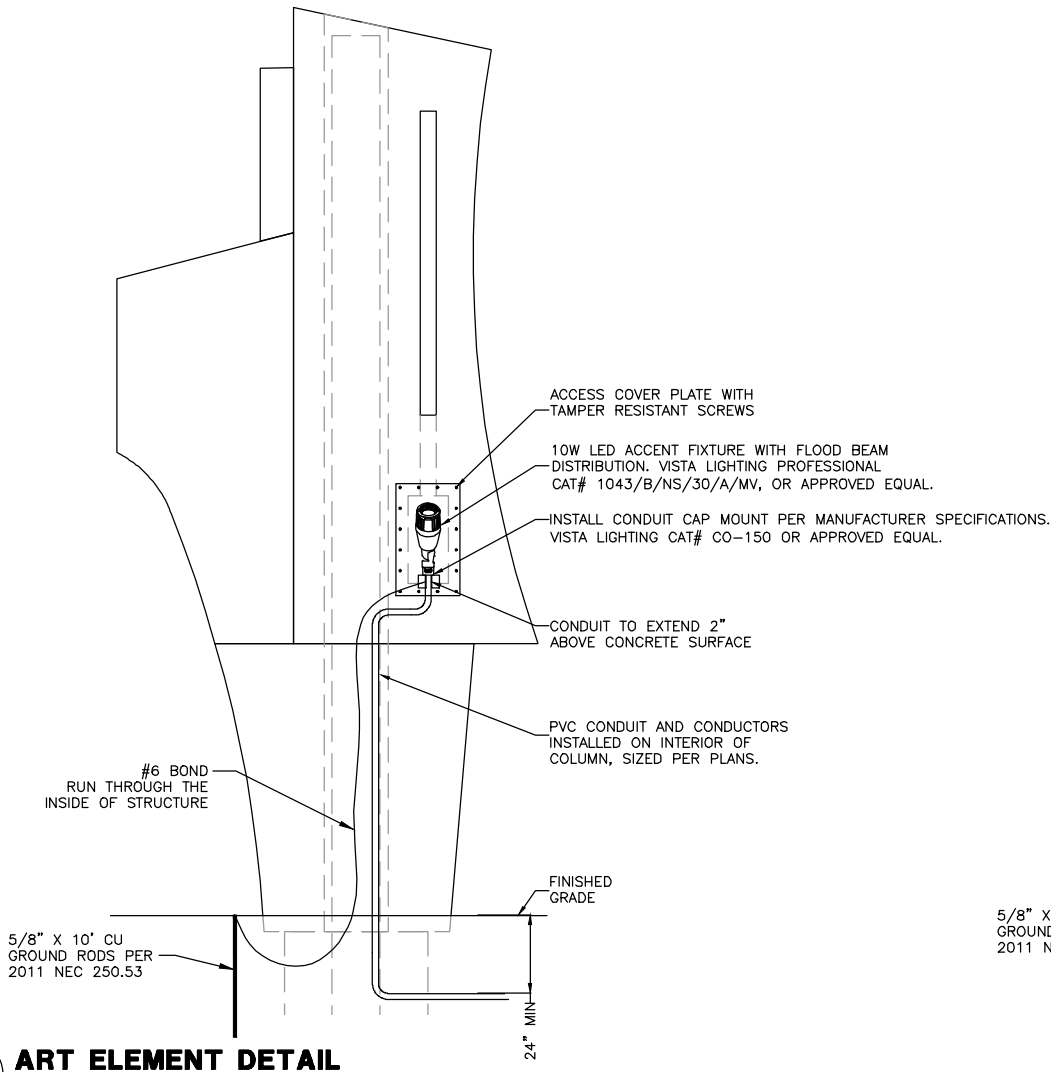
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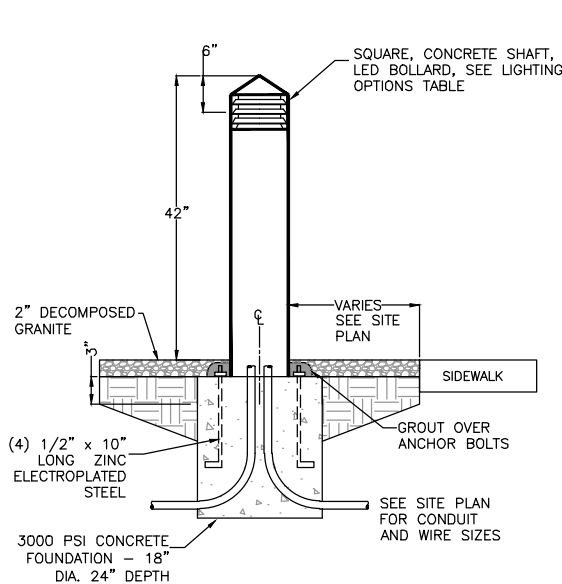
GRAND CANALSCAPE PHASE 1

- ① LED LIGHT FIXTURE WITH IES PHOTOMETRIC DISTRIBUTION PER PLANS. ALL FIXTURES ARE TO BE PROVIDED FROM THE SAME MANUFACTURER. SEE LIGHTING OPTIONS TABLE THIS SHEET.
- ② DIRECT-BURIED, TAPERED, SQUARE, PRE-STRESSED, REINFORCED, SPUN CONCRETE POLE. POLES SHALL HAVE CHARCOAL COLOR, EXPOSED AGGREGATE FINISH WITH ANTI-GRAFFITI SEALER (PROVIDE SAMPLES WITH SUBMITTALS FOR COLOR APPROVAL). ALL POLES ARE TO BE PROVIDED FROM THE SAME MANUFACTURER. SEE LIGHTING OPTIONS TABLE THIS SHEET.
- ③ FLUSH MOUNTED HANDHOLE WITH FLUSH, TAMPERPROOF, STAINLESS STEEL SECURITY SCREWS (BUTTON TORX WITH CENTER PIN). POLE MANUFACTURER TO PLACE HANDHOLE SO THAT IT WILL BE LOCATED ABOVE FINISHED GRADE AT HEIGHT NOTED IN DETAIL TO CENTER OF HANDHOLE AFTER INSTALLATION. INSTALL POLE WITH HANDHOLE FACING AWAY FROM PATH/SIDEWALK, WHERE POSSIBLE. WHERE POLE IS INSTALLED AGAINST WALL, HANDHOLE TO FACE PATH/SIDEWALK.
- ④ POLE MANUFACTURER TO PROVIDE A FACTORY INSTALLED GROUND WIRE WHICH IS CONNECTED TO THE STEEL REINFORCING IN THE POLE. CONNECT THE ELECTRICAL SYSTEM GROUND WIRE TO THIS POLE GROUND WIRE.
- ⑤ APERTURE IN POLE BASE FOR UNDERGROUND WIRING. APERTURE SIZED 1-1/2" BY 5" MINIMUM. PROVIDE TWO (2) EACH POLE AT 180 DEGREES FROM EACH OTHER AND 90 DEGREES FROM HANDHOLE. TAPE OPENINGS PRIOR TO BACKFILLING THE DRILLED HOLE.
- ⑥ PVC SCHEDULE 40 CONDUIT INTO POLE BASE FOR ELECTRICAL BRANCH CIRCUIT. SEE LIGHTING SITE PLAN FOR SIZES AND QUANTITIES. CONDUITS ARE TO BE INSTALLED IN POLE TO A POINT 12" ABOVE GRADE MINIMUM.
- ⑦ AFTER POLE HAS BEEN ALIGNED AND IS PLUMB, BLOCK POLE IN PLACE UNDERGROUND, BACKFILL HOLE WITH CEMENTIOUS EARTH BACKFILL TO A POINT 4" BELOW FINISHED GRADE, BACKFILL THE REMAINING 4" WITH SURROUNDING SOIL. CEMENTIOUS EARTH BACKFILL - MIX ONE PART DRY CEMENT POWDER TO FIFTEEN PARTS CLEAN, WASHED SAND.
- ⑧ COIL 20' OF #8 SOLID COPPER BOND. RUN BOND THROUGH POLE TO FACTORY INSTALLED GROUND WIRE IN HAND HOLE.
- ⑨ 1" FINISHED RIVER ROCK FOR DRAINAGE, COMPACT BEFORE SETTING POLE.
- ⑩ FINISHED GRADE.
- ⑪ WHERE LIGHTS ARE INSTALLED NEXT TO PATHWAY OR SIDEWALK, MAINTAIN CLEARANCE FROM EDGE TO CENTER OF POLE AS SHOWN ON SITE PLAN.
- ⑫ PROVIDE BUSSMAN #HEB FUSE HOLDER, ON EACH UNGROUNDED CONDUCTOR, WITH 5 AMP FUSES FOR INLINE FUSING. WHERE CIRCUIT IS SPLICED IN HANDHOLE, MAKE ALL SPLICES WITH UL486D WET LISTED WIRE NUTS, EQUAL TO DRYCONN AQUA WATERPROOF CONNECTORS. PROVIDE 18" MINIMUM OF SLACK IN THE CONDUCTORS.
- ⑬ TENON MOUNT SLIPFITTER PROVIDED BY POLE MANUFACTURER, CONTRACTOR TO COORDINATE SIZE OF SLIPFITTER SO THE FIXTURE COVERS ENTIRE TENON DOWN TO THE POLE TOP MOUNTING PLATE. PAINT EXPOSED METAL MOUNTING PLATE ON TENON TO MATCH FIXTURE.

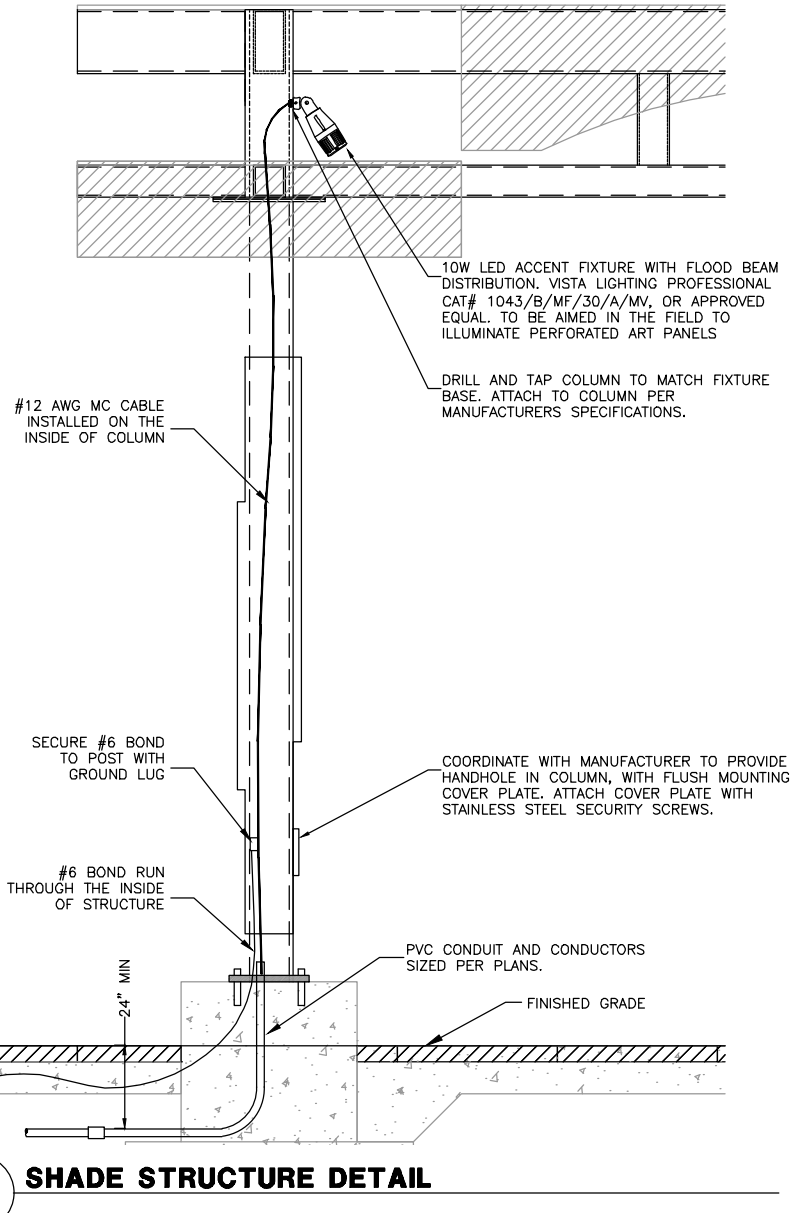
#### 4 SQUARE CONCRETE POLE AREA LIGHT DETAIL



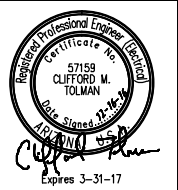
## 6 ART ELEMENT DETAIL



## 5 SQUARE BOLLARD LIGHT DETAIL



## 7 SHADE STRUCTURE DETAIL



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
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DES: DVG		DR: DVG	CK: CMT	DATE: 12/16

POLE MOUNTED LED LIGHT FIXTURE PER PLANS:

1. 33W, TYPE II DISTRIBUTION EATON, STREETWORKS GALLEON:  
CAT# GAN/AF/02/LED/U/T2/CC/7030/300/2L/LCF
2. 27W, TYPE II DISTRIBUTION BEACON LIGHTING VIPER:  
CAT# VPS/24NB-27/3K/T2/UNV/2PF/RAL
3. 35W, TYPE II DISTRIBUTION NLS LIGHTING VUE:  
CAT# VUE-1/T2/32L/530/30K/UNV/MA/CS

CONCRETE POLE FOR PATH LIGHTING PER PLANS:

1. AMERON CONCRETE POLE:  
FOR 12' MOUNTING USE: AMERON CAT# SEQ-4  
FOR 15' MOUNTING USE: AMERON CAT# SEQ-4.6
2. UTILITY STRUCTURES CONCRETE POLE:  
FOR 12' MOUNTING USE: UTILITY STRUCTURES CAT# OX-175-AL-4-30  
FOR 15' MOUNTING USE: UTILITY STRUCTURES CAT# OX-200-AL-4-30
3. TRADITIONAL CONCRETE POLE:  
FOR 12' MOUNTING USE: TRADITIONAL CAT# D512-E-G-T  
FOR 15' MOUNTING USE: TRADITIONAL CAT# D515-E-G-T

CONCRETE LED BOLLARD PER PLANS:

1. 42W. VISIONAIRE LIGHTING ENDURASCAPE:  
CAT# EDS-4A/COG/20LC/7/3K/UVN/AB/CC/HV
2. 25W. KIM LIGHTING VSBTIC:  
CAT# VSB1C/20L/3K/UV/CC/CH-C
3. 27W. H.E. WILLIAMS LIGHTING OSC12S:  
CAT# OSC12S-L20/830/LG/PT/CC/RAL/AB/DRV/240V

## LIGHTING OPTIONS TABLE

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

## ELECTRICAL DETAILS

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: DVG	DES: CMT	CK: CMT	SHEET	TOTAL
DATE: 12/16	DATE: 12/16	DATE: 12/16	NO:	SHEETS
SCALE: N.T.S.		<b>SE3.3</b>	117	153

Call at least two full working days  
before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100



GRAND CANALSCAPE PHASE 1

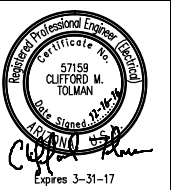
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

**WRIGHT**  
engineering corporation  
ELECTRICAL ENGINEERING AND DESIGN

165 EAST CHILTON DRIVE  
CHANDLER, ARIZONA 85225  
PHONE: 480.497.5829  
FAX: 480.497.5807  
www.wrightengr.com

Wright Project # 15177



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600074	118	153
DES: DVG		DR: DVG	CK: CMT	DATE: 12/16

**TY. LIN INTERNATIONAL**  
engineers | planners | scientists

T.Y. LIN INTERNATIONAL  
CONSULTING ENGINEER

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

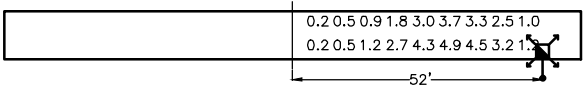
PHOTOMETRIC ANALYSIS

TYPICAL RESULTS FOR 12' MOUNTING HEIGHT

15' MOUNTING HEIGHT TO BE USED AS STANDARD FIXTURE HEIGHT, EXCEPT WHERE OVERHEAD ELECTRICAL IS PRESENT.

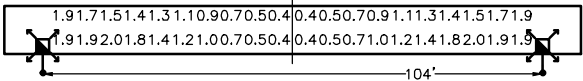
VERTICAL FC RESULTS:

MAXIMUM FOOT-CANDLE	4.9
MINIMUM FOOT-CANDLE	0.2
AVERAGE FOOT-CANDLE	2.2



HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	2.0
MINIMUM FOOT-CANDLE	0.4
AVERAGE FOOT-CANDLE	1.2
UNIFORMITY OF LIGHT LEVELS (AVG/MIN)	3.0



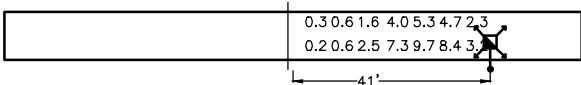
**LEGEND:**  
LED POLE MOUNTED LIGHT FIXTURE  
3000K, TYPE II DISTRIBUTION  
15' MOUNTING HEIGHT  
5' BACK OF PATH (TYPICAL, SOME LOCATIONS VARY SLIGHTLY)

TYPICAL RESULTS FOR 12' MOUNTING HEIGHT

12' MOUNTING HEIGHT TO BE USED ONLY WHERE OVERHEAD ELECTRICAL IS PRESENT.

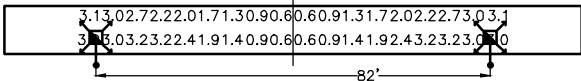
VERTICAL FC RESULTS:

MAXIMUM FOOT-CANDLE	9.7
MINIMUM FOOT-CANDLE	0.2
AVERAGE FOOT-CANDLE	3.6



HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	3.2
MINIMUM FOOT-CANDLE	0.6
AVERAGE FOOT-CANDLE	2.1
UNIFORMITY OF LIGHT LEVELS (AVG/MIN)	3.4



**LEGEND:**  
LED POLE MOUNTED LIGHT FIXTURE  
3000K, TYPE II DISTRIBUTION  
12' MOUNTING HEIGHT  
5' BACK OF PATH (TYPICAL, SOME LOCATIONS VARY SLIGHTLY)

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TYPICAL LIGHT SPACING EXHIBIT

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

ST87600074

DR: DVG	DES: CMT	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 12/16	DATE: 12/16	DATE: 12/16	118	153

SCALE: N.T.S. **SE4.1**

GRAND CANALSCAPE PHASE 1
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

REVISION BY CITY OF PHOENIX		NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX		NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX		NO.	DESCRIPTION	REV BY	CHK BY	DATE

## Integrated Art Elements Sheet Index

SHEET 119	INTEGRATED ART ELEMENT SHEET INDEX, NOTES, LOCATIONS, AND QUANTITIES
SHEETS 120 - 126	LOCATION SHEETS FOR INTEGRATED ART ELEMENTS
SHEETS 127 - 128	LOCATION SHEETS FOR TRAIL MARKER ART ELEMENTS
SHEETS 129 - 132	SCULPTED SHADE STRUCTURE SHEETS
SHEET 133	SCULPTED BENCH ELEMENT B
SHEET 134	SCULPTED BENCH ELEMENT S
SHEET 135	SCULPTED LOW WALL “W” ELEMENTS
SHEET 136	INTEGRATED ART ELEMENT DETAILS
SHEETS 137 - 138	TRAIL MARKER 1 (TM1) ART ELEMENTS
SHEETS 139 - 140	TRAIL MARKER 2 (TM2) ART ELEMENTS
SHEETS 141 - 142	TRAIL MARKER 3 (TM3) ART ELEMENTS
SHEETS 143 - 153	ENGINEERING SHEETS FOR INTEGRATED ART ELEMENTS

## Integrated Art Elements Location and Quantities Chart

Description / Location (west to east)	Station	Art Elements											Sheet #
		P1	P2	B	S	W1	W2	W3	TM1	TM2	TM3	Sq ft*	
U: Uptown Project Area G: Gateway Project Area													
Sculpted Ground Elements East of 15 <sup>th</sup> Ave	U 22	55	4	2	2	5	5	5				250	120
Trail Marker at 9 <sup>th</sup> Ave Alley neighborhood connection	U 32.5								1				127
9 <sup>th</sup> Ave Shade Structure and Sculpted Ground Elements	U 33 -33.5	186		7	4							602	121
Trail Marker at 7 <sup>th</sup> Ave - West Side	U 38										1		127
Sculpted Elements and Trail Markers at 3 <sup>rd</sup> Ave Bridge	U 52	9		3						1	1	34	122+127
Trail Marker at Central Ave - East Side	U 66								1				127
Sculpted Paving at 7 <sup>th</sup> Street - East Side	U 93	13										70	122
Sculpted Ground Elements at end of 8 <sup>th</sup> Street	U 96	11		3								70	123
Sculpted Ground Elements at end of 8 <sup>th</sup> Place	U 99.5	11		2	1							75	123
Sculpted Ground Elements at end of 9 <sup>th</sup> Street	U 103	11		2	1							70	124
Sculpted Elements and Trail Marker at 10 <sup>th</sup> Street	U 106	21		3						1		110	124+128
Sculpted Ground Elements East of Longview Ave	U 130.5- 131	4	4	4		5	5	6				304	125
Sculpted Ground Elements at end of 13 <sup>th</sup> Place	U 134.5	11		2	1							76	125
Trail Marker at the end of Garfield Street	G 21.5										1		128
Trail Marker at the end of 36 <sup>th</sup> Street	G 26.5									1			128
37 <sup>th</sup> Street Shade Structure and Ground Elements	G 34 - 35	236	3	11	3	2	3	3				725	126
Trail Marker at the end of 37 <sup>th</sup> Street	G 35								1				128
Totals		568	11	39	12	12	13	14	3	3	3	2386	
* Approximate square foot concrete slab area, includes sidewalk extended from main pathway													
Minimum stockpile recommended to be ordered from fabricators: 30 P1s and 2 of each P2, S, B, W1, W2, and W3 Elements													

## IMPORTANT NOTES TO BIDDERS

(Also see all notes on individual sheets for additional information)

- Concrete fabricators and aluminum fabricators are responsible for the creation of all necessary shop drawings for review and approval by the Artist Michael Singer Inc. (Artist) and Engineer of Record (EOR) prior to fabrication. Any changes or deviations from the 100% construction document's structural drawings may require additional sealed engineering drawings by the fabricator's engineer for review and approval by the EOR. The Artist will also review any changes from an aesthetic perspective.
- Specifications and Testing: Prior to creating sample, the concrete fabricator must provide all material / product specifications (such as concrete mix design) and testing results for all mixes to be reviewed and approved by the Artist and EOR. Mixes containing recycled content are preferred, but will need to meet all necessary performance standards (such as PSI) as required in the specifications (as defined in the following drawings).
- Samples: Prior to full fabrication the concrete fabricator must create one B bench element, one W3 wall element, and one TM1 Trail Marker, one P1 paver element, and one P2 paver element (as defined in the following drawings) as samples for approval by the Artist, City of Phoenix, and EOR. Color and finish samples must be provided to and approved by the Artist prior to the creation of these samples. If samples are approved they may count toward the total number of finished product.
- Concrete fabricators should assume the following number of variations per element: P Elements - 10 variations, W1, W2, W3 elements - 3 variations each, S elements - 3 variations, B elements - 4 variations. Variations impact the size and location of sculpted rubber mold inserts and/or sandstone inserts, but not the overall size or shape of the element.
- The Artist intends to have a contract with the City of Phoenix to provide certain materials to this project. The Artist shall provide ONLY the following materials for implementation of the project:

A. The Artist will provide Art Shop Drawings to the concrete fabricator. The location of all sculpted rubber mold inserts and sandstone inserts will be sized and identified by the Artist for each Art Element (S, B, W, etc..) as well as variations on those elements (S1, S2, S3, for example) in the Art Shop Drawings (separate from the fabricator's technical shop drawings). The Art Shop Drawings will be provided solely for the placement of the rubber inserts and to provide direction regarding the placement of the sandstone inserts. Not provided by Artist: Art Shop Drawing information will be incorporated into concrete fabricator's technical shop drawings by the fabricator.

B. The Artist will provide the EOR and the aluminum fabricator a set of Art Shop Drawings (separate from the fabricators technical shop drawings) solely for the Sculpted Cast Aluminum Panels for review, coordination and approval by the EOR and fabricator.

C. Upon written approval of 5A above the Artist will create all sculpted rubber mold inserts that are necessary for the fabrication of the concrete elements S, B, W, TM, and P. The sculpted rubber mold inserts will be created from high quality urethane rubber and will be expected to be used by the concrete fabricator up to 30 times each (as necessary). The Artist will supply the sculpted rubber mold inserts to the fabricator; the fabricator is responsible for returning the rubber mold inserts to the Artist at the end of the fabrication.


D. Upon written approval of 5B above the Artist will create all Sculpted Cast Aluminum Panels and will supply them to the fabricator responsible for creating the aluminum shade structures. The Sculpted Cast Aluminum Panels will not be provided with any pre-drilled holes.

E. The Artist will provide the text (as well as text size and layout) for the Trail Marker Cover Plate on detail D5 of sheet 153. The Artist is NOT responsible for the procurement of the Trail Marker Cover Plate, frame, or associated hardware.

- “Bermuda Dunes” Sandstone has been selected by the Artist for this project to be embedded in the cast concrete art elements per detail D4 on sheet 153. The concrete fabricator must procure this stone and should assume 180 square feet total of ¾” saw finished stone - which will be cut to a variety of small sizes to fit the placement in S, B, and W elements as noted in the drawings. The Trail Markers (TM elements) will have larger pieces of stone embedded in the concrete. Fabricator should assume up to 720 holes (½” deep, 3/8” wide) for the back sides of these stone embeds to accommodate detail D4 on sheet 153. One potential source for the Bermuda Dunes Sandstone (with holes) is “Robert Stone - 2317 Interstate Avenue, Grand Junction, Colorado 81505 - (970) 256-9297”; stone may be procured from this supplier or an Artist approved equal (samples must be provided). The concrete fabricator is responsible for the procurement and placement of all bolts as indicated in detail D4 on sheet 153.

- The Artist has met with the following area fabricators regarding this project:

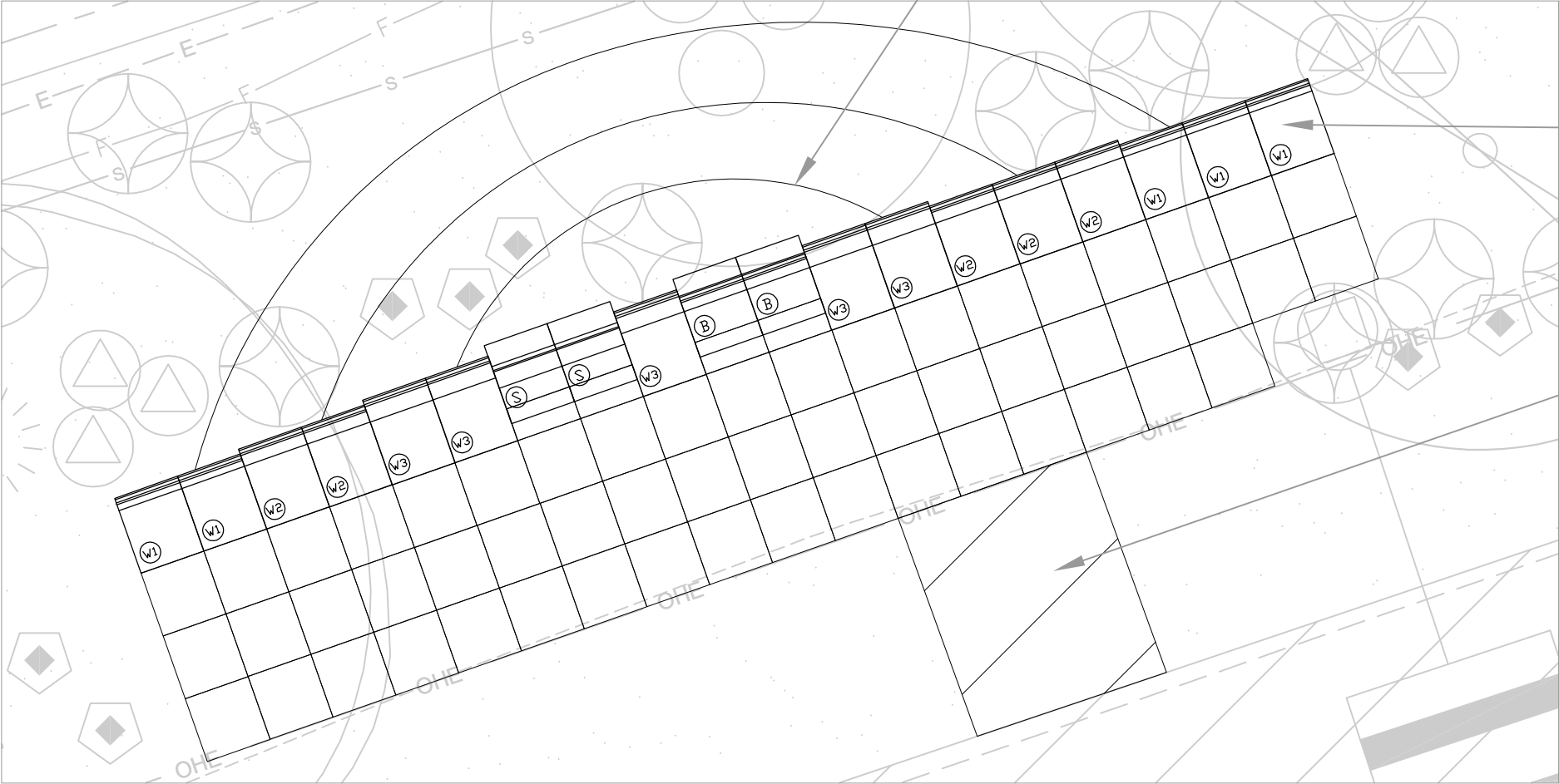
Precision Precast 4150 E Magnolia St, Phoenix, AZ 85034; (480)-619-0018 Attn: Tim Walter  
Mesa Precast 415 S Price Rd, Tempe, AZ 85281; (480)-968-5400 Attn: Brad Buntrock  
Magnum Companies 2439 S. 49th Avenue, Phoenix, AZ 85043; (602)-272-3600 Attn: Shane Altmeyer  
Southwest Fabrication 22233 N. 23rd Ave. Phoenix, AZ 85027; (602)-721-5331 Attn: John Shipman

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	
T.Y. LIN INTERNATIONAL engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: MSI		DR: MSI	CK: MSI		DATE: 9/16
<div><div><b>Michael Singer Studio</b></div><div><small>Michael Singer Inc. Studio North - Ph: 803-464-2165 POBox 682, Wilmington, VT 05363  Studio South - Ph: 561-865-7683 321 NW 1st Ave, Delray Beach, FL 33444 <a href="http://www.michaelsinger.com">www.michaelsinger.com</a></small></div></div>					
Phoenix Grand Canal Integrated Art Sheet Index, Notes, and Location and Quantities Chart					
Notes: 1. Integrated Art Elements have been located with feedback from the Salt River Project (SRP), Arizona Public Service Company (APS), City of Phoenix Departments including Utilities, Water Services, Streets, and Arts and Culture, and the TY Lin Design Team.  2. This drawing is intended to show the number and layout of Art Elements only, all other data is shown for reference only. All engineering drawings, details and requirements supersede Integrated Art Drawings. Any conflicts between such drawings should clarified in a Request for Information.  3. See sheets 129 - 142 for details on all Integrated Art Elements B, S, W1, W2, W3, TM1, TM2, TM3, Pavers, and Shade Structures. All Art Elements shown with nominal dimensions.  4. All Integrated Artwork is shown outside of the 20' SRP maintenance zone. Where necessary pathway paving is shown as extended from the main pathway to join with the Artwork outside of the 20' zone. All Integrated Artwork elements (other than pavers) are shown at least 6' away from existing water and sewer lines. All measurements rely on the accuracy of base survey data.  5. Any changes to the layout of Integrated Art Elements requires approval by the Artist Michael Singer, TY LIN, and the City of Phoenix. Landscape layout may be revised by Gavan and Barker Landscape Architects if there are any modifications to the Integrated Art layout.  6. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34".					
<div>Call at least two full working days before you begin excavation.</div> <div><b>ARIZONA 811</b> Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County: (602) 263-1100</div>					
CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS. "PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."					
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT					
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH					
INTEGRATED ART DRAWINGS					
DR: MSI DATE: 09/16		DES: MSI DATE: 09/16		CK: MSI DATE: 09/16	
SHEET NO:			TOTAL SHEETS		
SCALE: As Noted (otherwise NTS)			119 153		

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

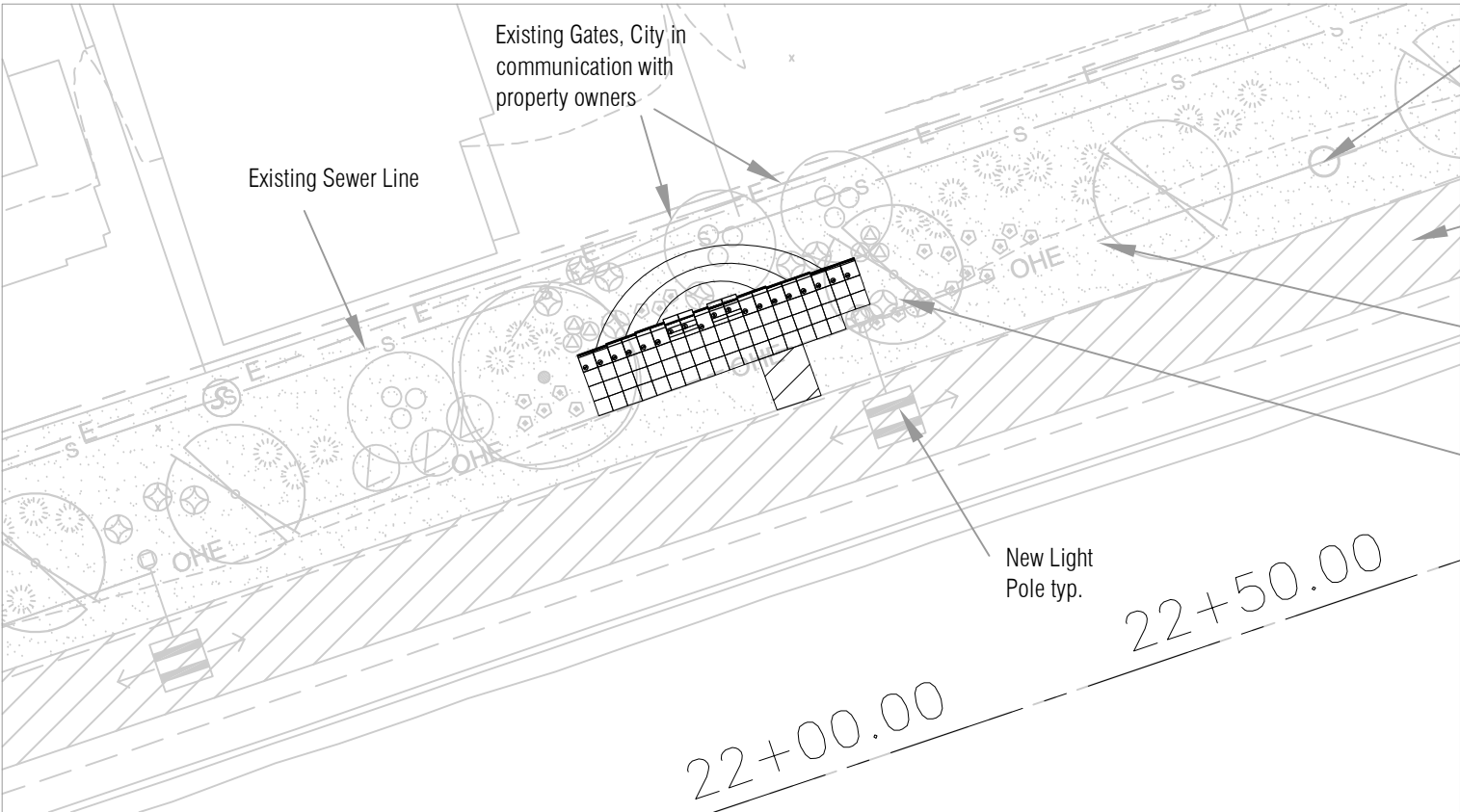
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION



Integrated Art area including sculpted paving, low wall elements (W elements), and bench elements (S and B). See section details for this condition on sheets 135 and 136.

Pathway extension to the edge of the 20' SRP maintenance zone to connect to Integrated Art

Detail Plan at Station 22  
1/4" = 1'



Existing Power Pole typ.

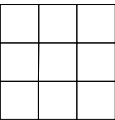
New Pathway

Existing Overhead Power Line typ.

Landscaping proposed as clusters around Integrated Art areas. Shade trees proposed to flank seating locations.

Area Plan at Station 22  
1" = 20'

Integrated Art Site Layout Key



20"x20" Sculpted Pavers  
See sheet 136 for detail



Bench Seat with Back (B Element)  
See sheet 133 for detail



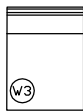
Bench Seat without Back (S Element)  
See sheet 134 for detail



Low Wall W1 Element  
See sheet 135 for detail



Low Wall W2 Element  
See sheet 135 for detail



Low Wall W3 Element  
See sheet 135 for detail

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	

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**T.Y. LIN INTERNATIONAL**  
CONSULTING ENGINEER

DES: MSI	DR: MSI	CK: MSI	DATE: 9/16
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Michael Singer Inc.  
Studio North - Ph: 802-464-2165  
POBox 682, Wilmington, VT 05363  
Studio South - Ph: 561-865-7683  
321 NW 1st Ave, Delray Beach, FL 33444  
www.michaelsinger.com

Phoenix Grand Canal Integrated Art  
Site Plan Layout  
Integrated Art Elements at Station 22

Notes:

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
**UPTOWN AND GATEWAY NORTH**

**INTEGRATED ART DRAWINGS**

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	120	153

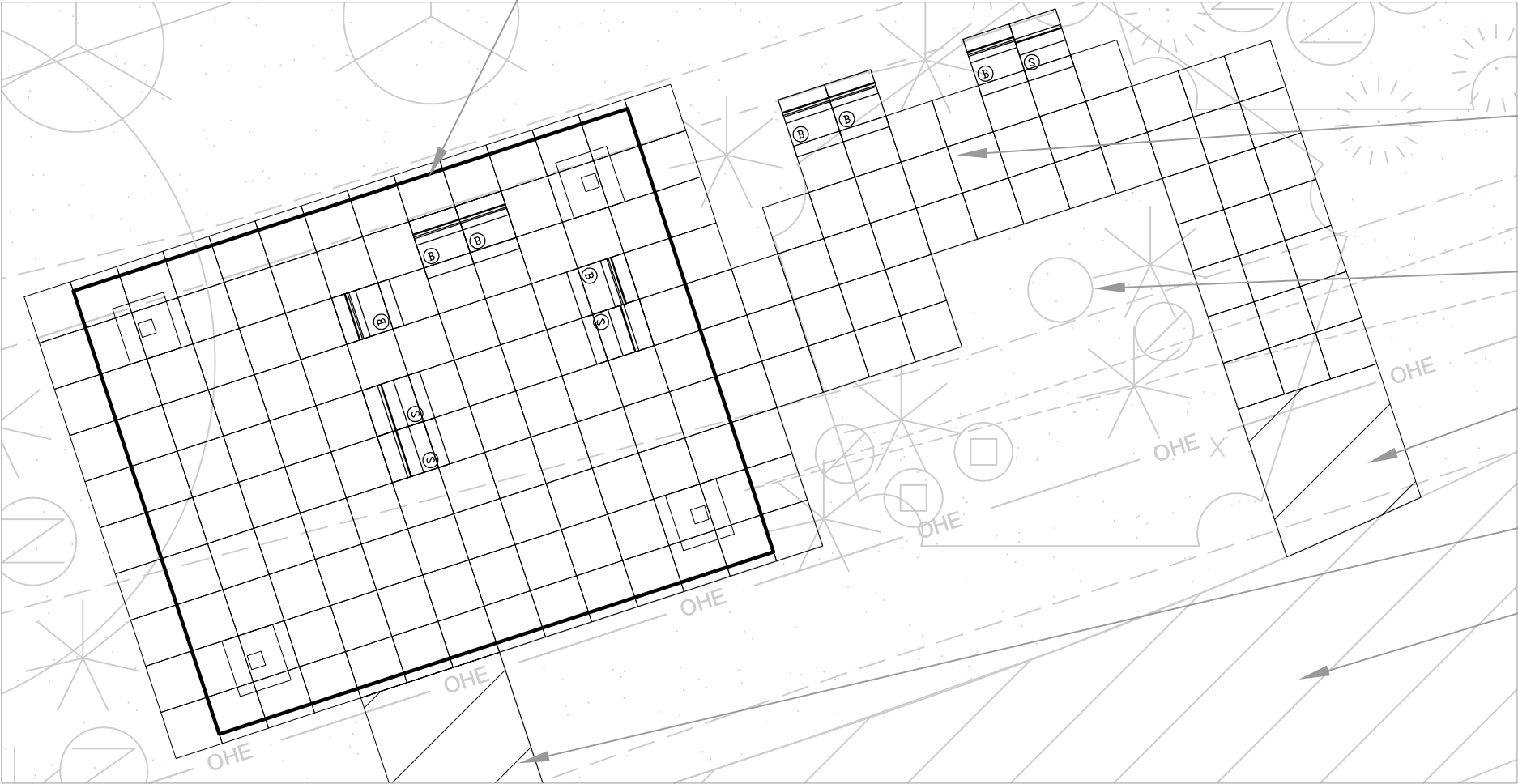
SCALE: As Noted (otherwise NTS)

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE

Sculpted Shade Structure (16'x20' canopy outline indicated) with sculpted paving and S and B bench elements below. See sheets 129-130 for elevations and additional detail on the 9th Ave Shade Structure.



Integrated Art area including sculpted paving and bench elements (S and B) associated with Sculpted Shade Structure.

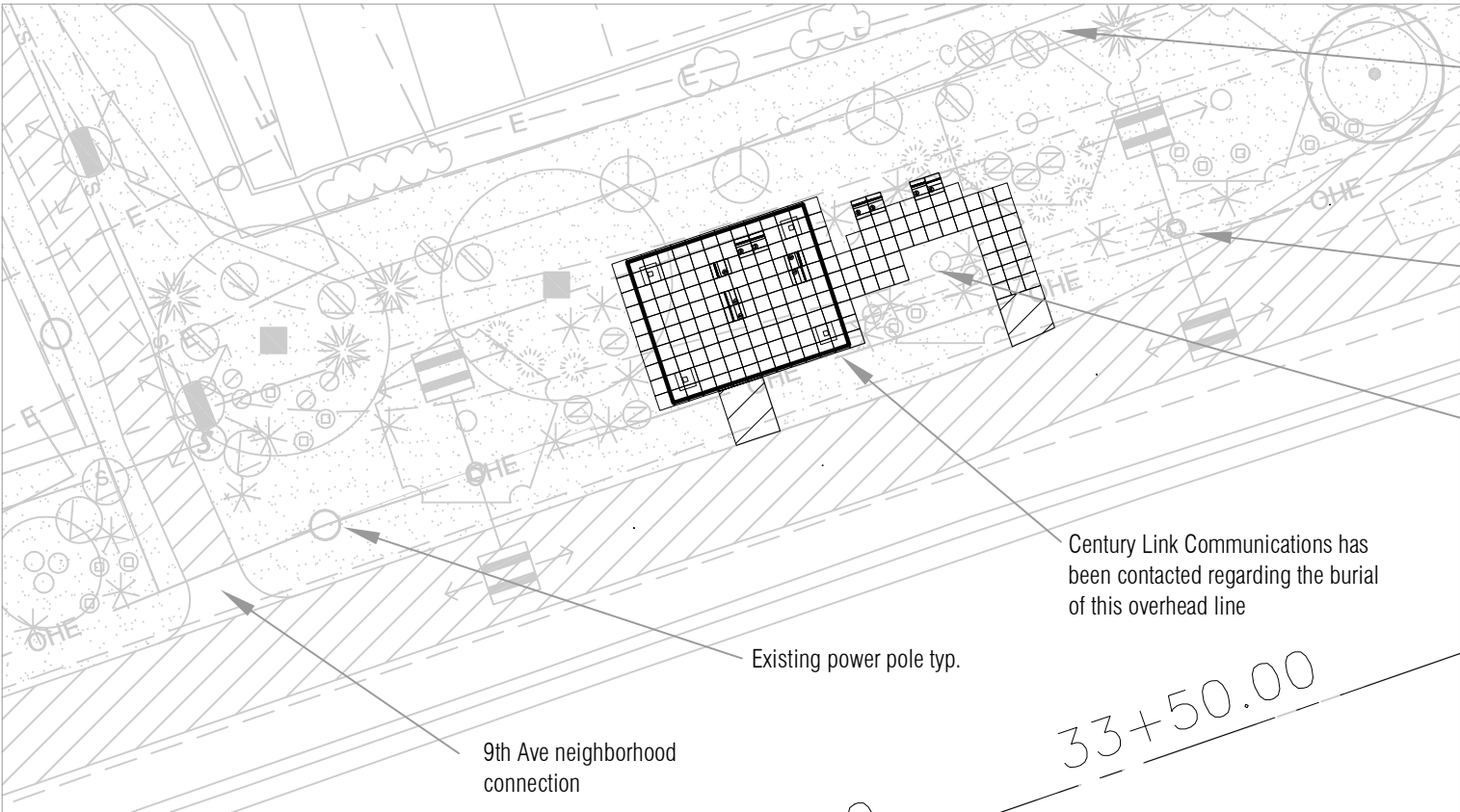
Shade trees, shrubs and ground covers surround the sculpted outdoor space.

Pathway extension to meet Integrated Art pavers

Pathway extension to the edge of the 20' SRP maintenance zone to connect to Integrated Art

New Pathway

Detail Plan at Station 33.5 - near 9th Ave  
3/16" = 1'



Encroachment within the existing alleyway will be necessary

New Light Pole typ.

Landscaping proposed as clusters around Integrated Art areas. Shade trees proposed to provide additional shade coverage for seating areas.

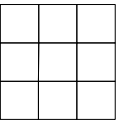
Century Link Communications has been contacted regarding the burial of this overhead line

Existing power pole typ.

9th Ave neighborhood connection

Area Plan at Station 33.5 - near 9th Ave  
1"=20'

Integrated Art Site Layout Key



20"x20" Sculpted Pavers  
See sheet 136 for detail



Bench Seat with Back (B Element)  
See sheet 133 for detail



Bench Seat without Back (S Element)  
See sheet 134 for detail



Low Wall W1 Element  
See sheet 135 for detail



Low Wall W2 Element  
See sheet 135 for detail



Low Wall W3 Element  
See sheet 135 for detail

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	
T.Y. LIN INTERNATIONAL engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: MSI		DR: MSI	CK: MSI	DATE: 9/16	



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Phoenix Grand Canal Integrated Art  
Site Plan Layout  
Integrated Art Elements at Station 33.5 -9th Ave

- Notes:
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  - This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34".



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"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

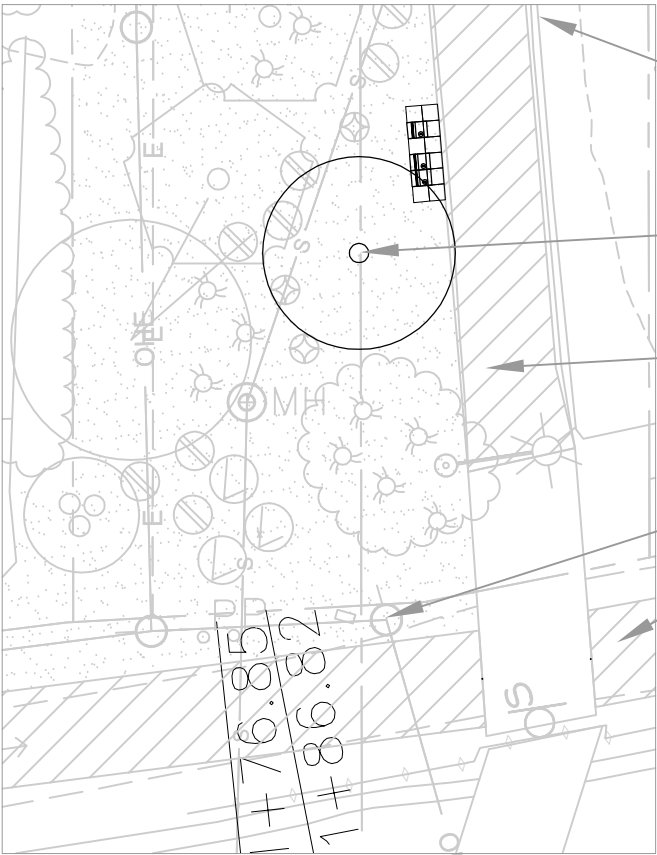
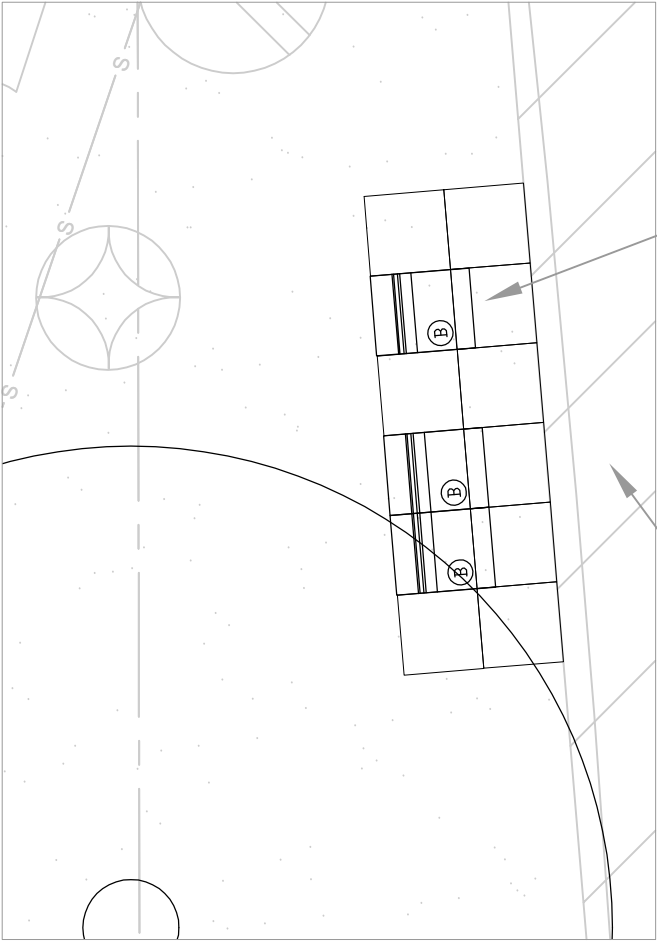
DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	121	153
SCALE: As Noted (otherwise NTS)				



REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE

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NO.	DESCRIPTION	REV BY / CKD BY / DATE

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE



Integrated Art area including sculpted paving and B bench elements. See sheet 133 for additional information.

Existing asphalt pathway replaced with new concrete walkway

Detail Plan at Station 52  
1/4" = 1'

See sheet 127 for location of Trail Marker

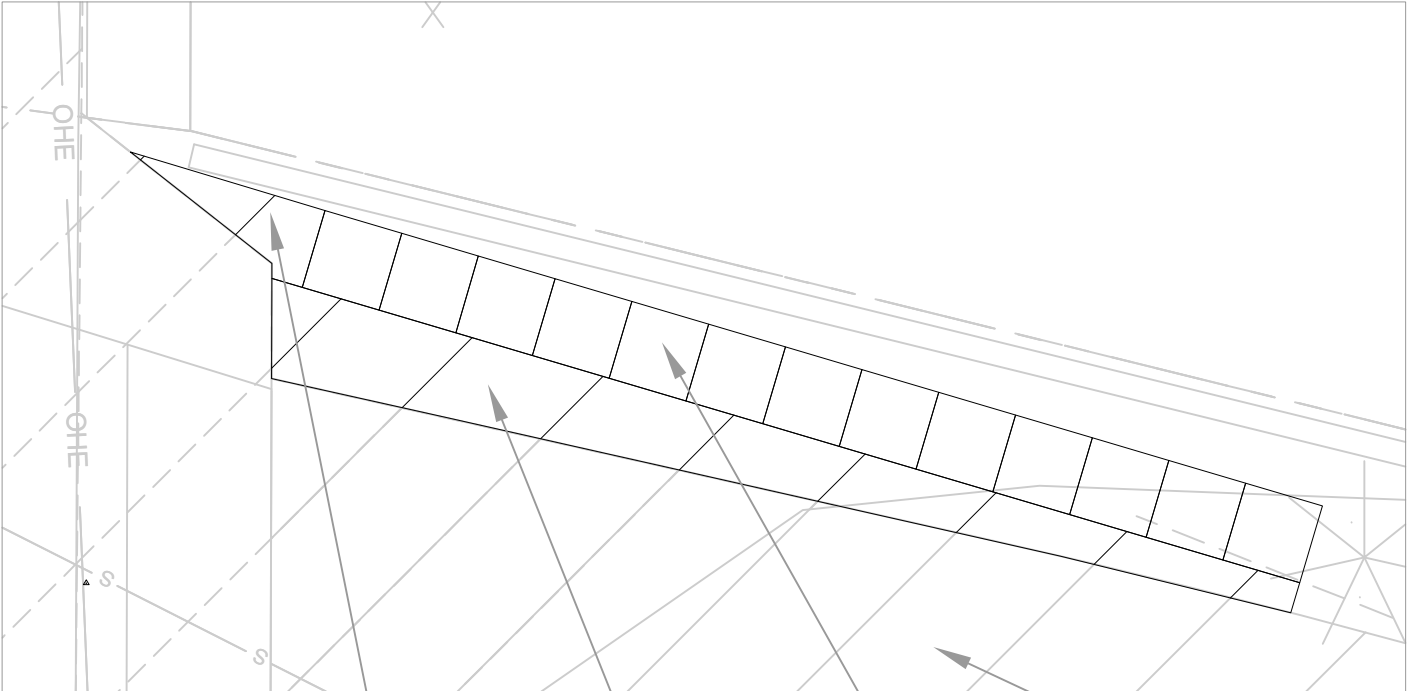
Approximate location of existing tree

Existing asphalt pathway replaced with new concrete walkway

Existing Power Pole typ.

New Pathway typ.

Area Plan near Station 52  
3rd Ave Bridge North side  
1" = 20'



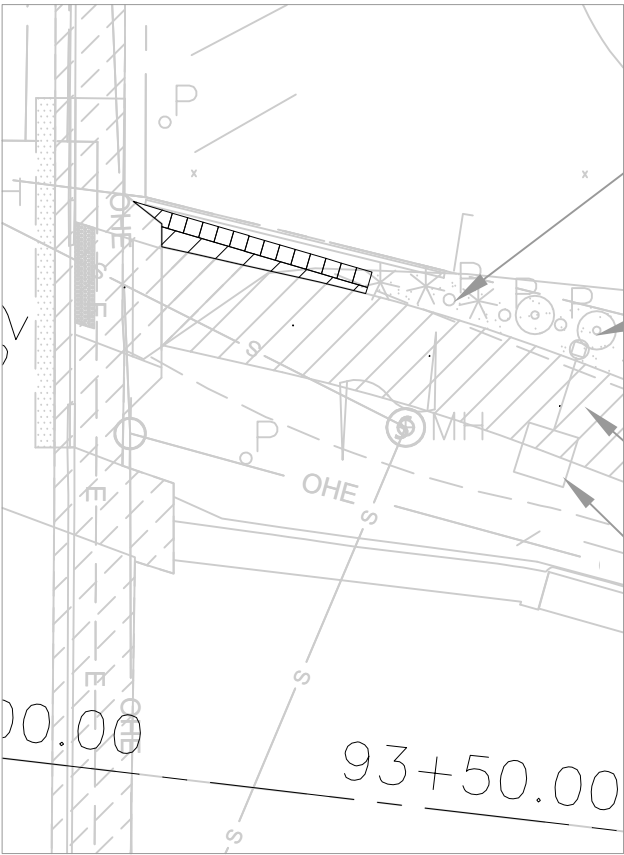
Detail Plan near Station 93,  
east side of N 7th Street  
1/4" = 1'

Transition concrete to pavers

Pathway extension to the edge of the 20' SRP maintenance zone to connect to Integrated Art

Integrated Art area with sculpted paving accent detail only

New Pathway typ.



Existing Bollards typ.

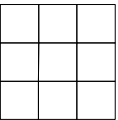
No benches proposed in this area due to adjacent parking lot and dumpster

New Pathway typ.

New Light Pole typ.

Area Plan near Station 93,  
east side of N 7th Street  
1" = 20'

Integrated Art Site Layout Key



20"x20" Sculpted Pavers  
See sheet 136 for detail



Bench Seat with Back (B Element)  
See sheet 133 for detail



Bench Seat without Back (S Element)  
See sheet 134 for detail



Low Wall W1 Element  
See sheet 135 for detail



Low Wall W2 Element  
See sheet 135 for detail



Low Wall W3 Element  
See sheet 135 for detail

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	
TY LIN INTERNATIONAL			T.Y. LIN INTERNATIONAL		
engineers   planners   scientists			CONSULTING ENGINEER		
DES: MSI	DR: MSI	CK: MSI	DATE: 9/16		



Phoenix Grand Canal Integrated Art  
Site Plan Layouts near Stations 52 (3rd Ave)  
and 93 (east of 7th Ave)

- Notes:
1. Integrated Art Elements have been located with feedback from the Salt River Project (SRP), Arizona Public Service Company (APS), City of Phoenix Departments including Utilities, Water Services, Streets, and Arts and Culture, and the TY Lin Design Team.
  2. This drawing is intended to show the number and layout of Art Elements only, all other data is shown for reference only. All engineering drawings, details and requirements supersede Integrated Art Drawings. Any conflicts between such drawings should be clarified in a Request for Information.
  3. See sheets 129 - 142 for details on all Integrated Art Elements B, S, W1, W2, W3, TM1, TM2, TM3, Pavers, and Shade Structures. All Art Elements shown with nominal dimensions.
  4. All Integrated Artwork is shown outside of the 20' SRP maintenance zone. Where necessary pathway paving is shown as extended from the main pathway to join with the Artwork outside of the 20' zone. All Integrated Artwork elements (other than pavers) are shown at least 6' away from existing water and sewer lines. All measurements rely on the accuracy of base survey data.
  5. Any changes to the layout of Integrated Art Elements requires approval by the Artist Michael Singer, TY LIN, and the City of Phoenix. Landscape layout may be revised by Gavan and Barker Landscape Architects if there are any modifications to the Integrated Art layout.
  6. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34".



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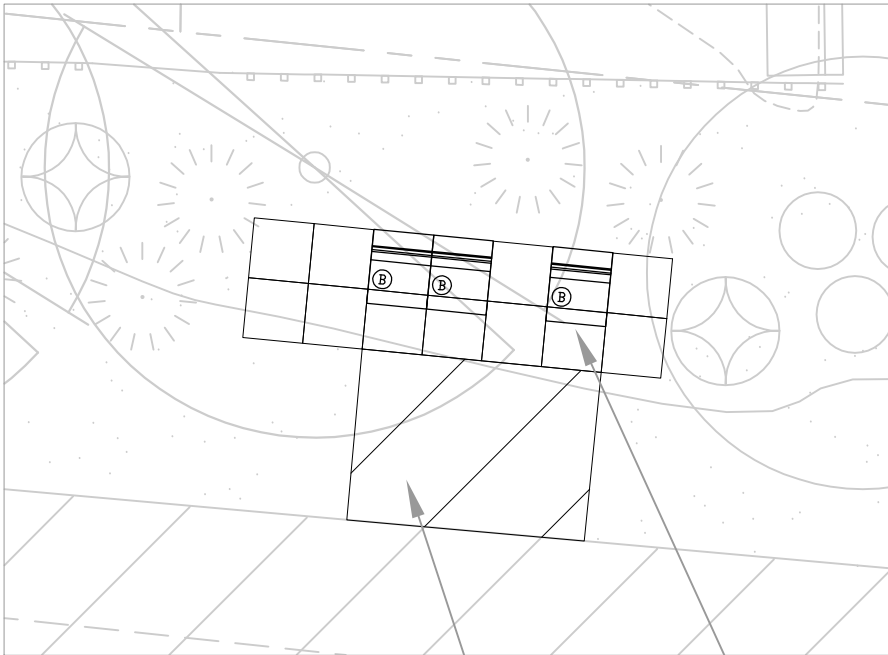
"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

CITY OF PHOENIX, ARIZONA					
STREET TRANSPORTATION DEPARTMENT					
GRAND CANALSCAPE PHASE 1					
UPTOWN AND GATEWAY NORTH					
INTEGRATED ART DRAWINGS					
DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS	
DATE: 09/16	DATE: 09/16	DATE: 09/16			
SCALE: As Noted (otherwise NTS)			122	153	

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NO.	DESCRIPTION	REV BY	CHK BY DATE

REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE

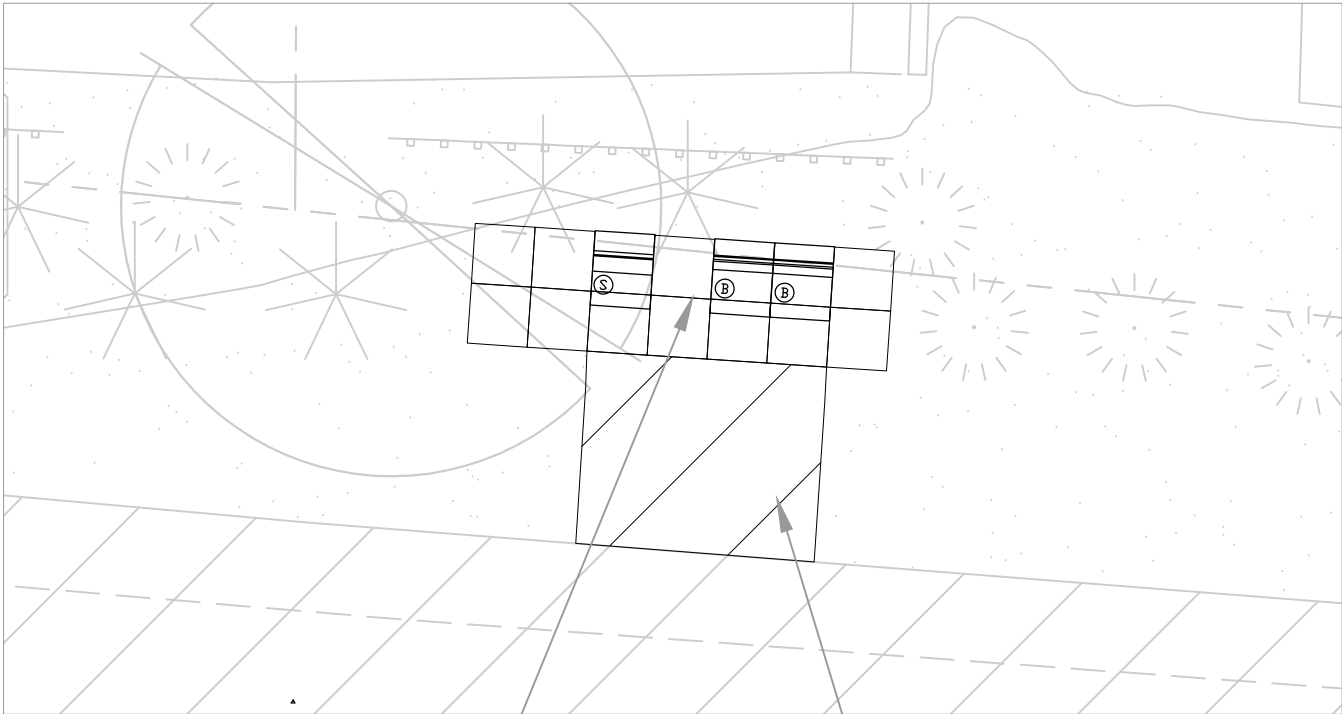
REVISION BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV BY	CHK BY DATE



Detail Plan near Station 96,  
end of 8th Street  
3/16" = 1'

Pathway extension to the  
edge of the 20' SRP  
maintenance zone to  
connect to Integrated Art

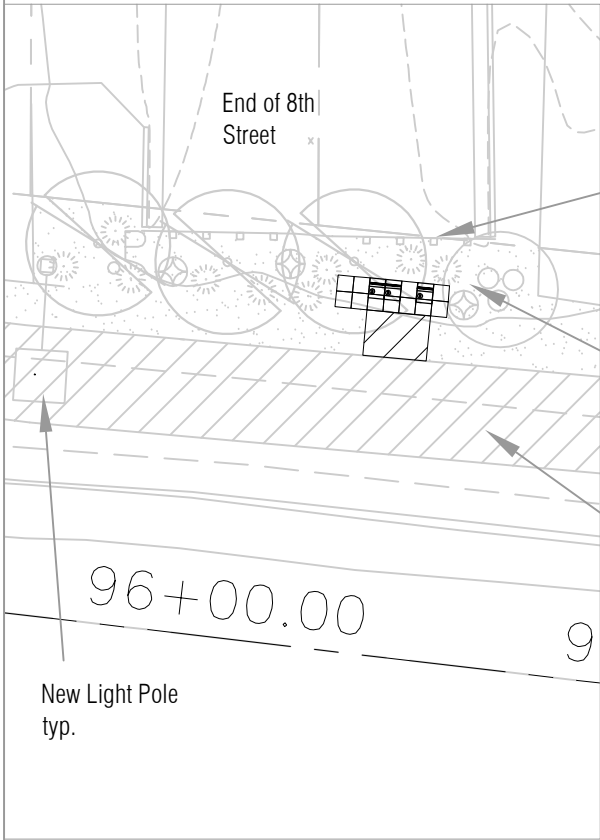
Integrated Art area including  
sculpted paving and B bench  
elements. See sheet 133 for  
additional information.



Detail Plan at Station 99.5,  
end of 8th Place  
3/16" = 1'

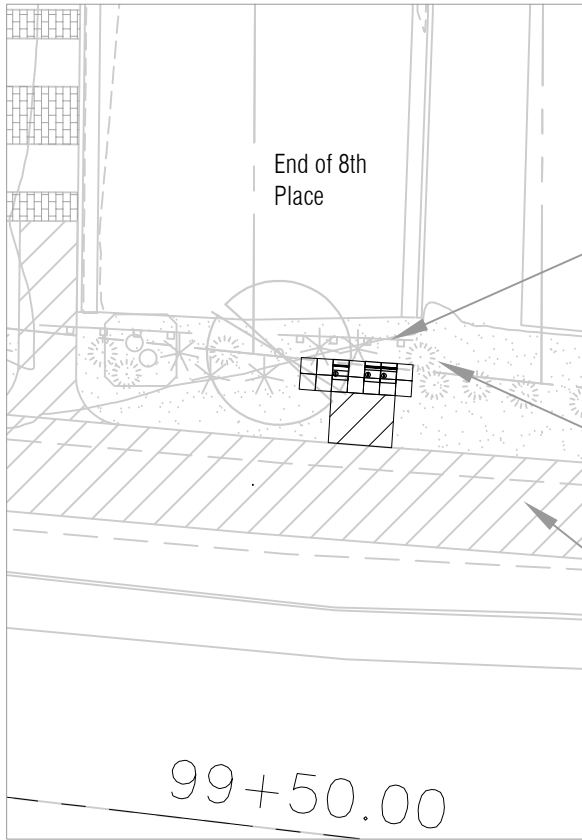
Integrated Art areas including sculpted  
paving and S and B bench elements. See  
sheets 133 and 134 for additional  
information.

Pathway extension to the edge of the  
20' SRP maintenance zone to connect  
to Integrated Art, typ.



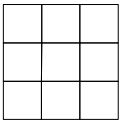
New Light Pole  
typ.

Area Plan near  
Station 96,  
end of 8th Street  
1" = 20'



Area Plan near  
Station 99.5,  
end of 8th Place  
1" = 20'

Integrated Art Site Layout Key



20"x20" Sculpted Pavers  
See sheet 136 for detail



Bench Seat with Back (B Element)  
See sheet 133 for detail



Bench Seat without Back (S Element)  
See sheet 134 for detail



Low Wall W1 Element  
See sheet 135 for detail



Low Wall W2 Element  
See sheet 135 for detail



Low Wall W3 Element  
See sheet 135 for detail

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	
T.Y. LIN INTERNATIONAL engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: MSI	DR: MSI	CK: MSI	DATE: 9/16		



Phoenix Grand Canal Integrated Art  
Site Plan Layout, Integrated Art Elements near  
Stations 96 (8th Street) and 99.5 (8th Place)

- Notes:
- Integrated Art Elements have been located with feedback from the Salt River Project (SRP), Arizona Public Service Company (APS), City of Phoenix Departments including Utilities, Water Services, Streets, and Arts and Culture, and the TY Lin Design Team.
  - This drawing is intended to show the number and layout of Art Elements only, all other data is shown for reference only. All engineering drawings, details and requirements supersede Integrated Art Drawings. Any conflicts between such drawings should be clarified in a Request for Information.
  - See sheets 129 - 142 for details on all Integrated Art Elements B, S, W1, W2, W3, TM1, TM2, TM3, Pavers, and Shade Structures. All Art Elements shown with nominal dimensions.
  - All Integrated Artwork is shown outside of the 20' SRP maintenance zone. Where necessary pathway paving is shown as extended from the main pathway to join with the Artwork outside of the 20' zone. All Integrated Artwork elements (other than pavers) are shown at least 6' away from existing water and sewer lines. All measurements rely on the accuracy of base survey data.
  - Any changes to the layout of Integrated Art Elements requires approval by the Artist Michael Singer, TY LIN, and the City of Phoenix. Landscape layout may be revised by Gavan and Barker Landscape Architects if there are any modifications to the Integrated Art layout.
  - This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34".



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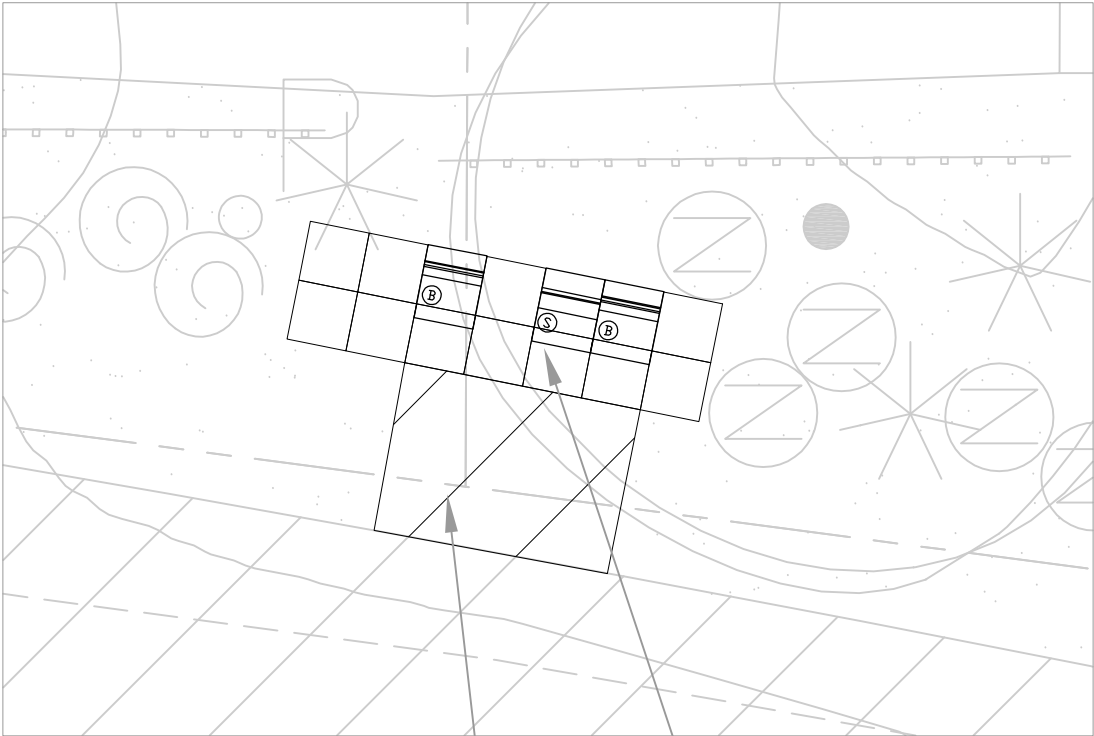
CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPARTMENT				
GRAND CANALSCAPE PHASE 1 UPTOWN AND GATEWAY NORTH				
INTEGRATED ART DRAWINGS				
DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	123	153
SCALE: As Noted (otherwise NTS)				



REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

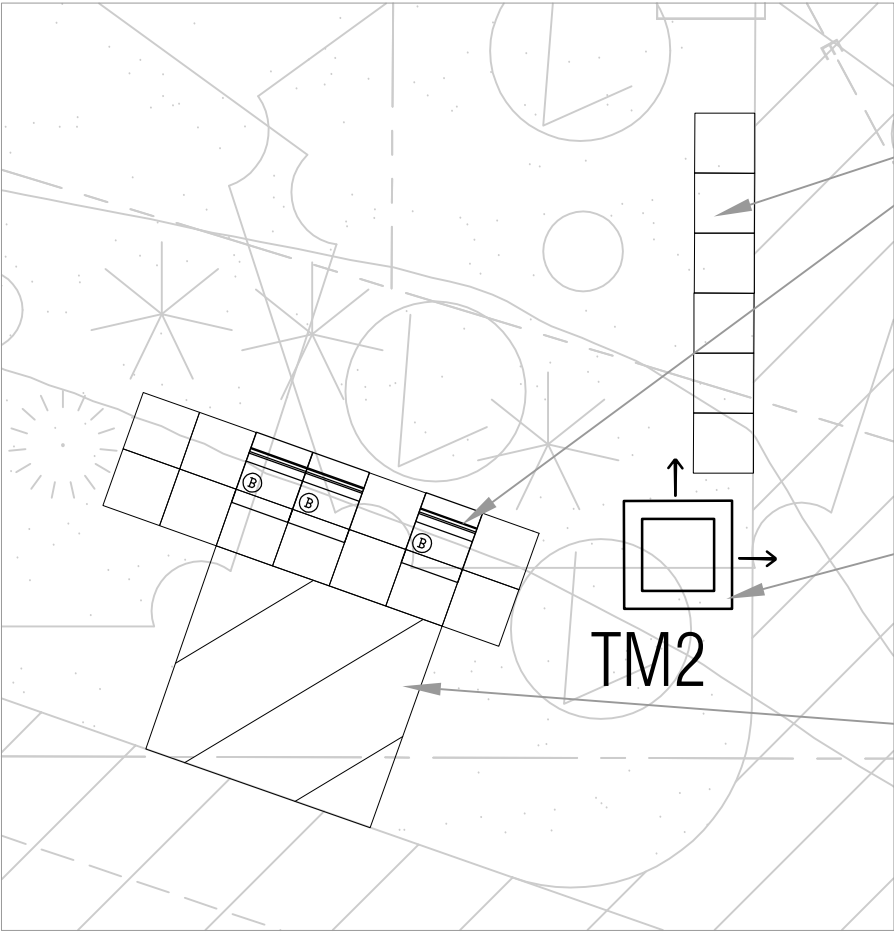
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION



Detail near Station 103,  
end of 9th Street  
3/16" = 1'

Pathway extension to the edge of the  
20' SRP maintenance zone to connect  
to Integrated Art, typ.

Integrated Art areas including sculpted  
paving and S and B bench elements. See  
sheets 133 and 134 for additional  
information.

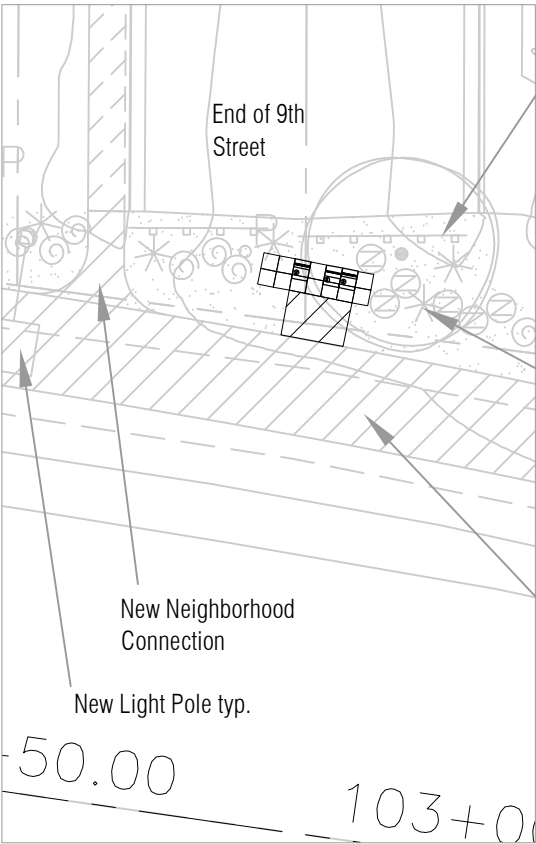


Integrated Art area  
including sculpted  
paving and B bench  
elements. See sheet  
133 for additional  
information.

Integrated Art Trail  
Marker TM2

Pathway extension to  
the edge of the 20' SRP  
maintenance zone to  
connect to Integrated  
Art, typ.

Detail near Station 106,  
end of 10th Street  
3/16" = 1'

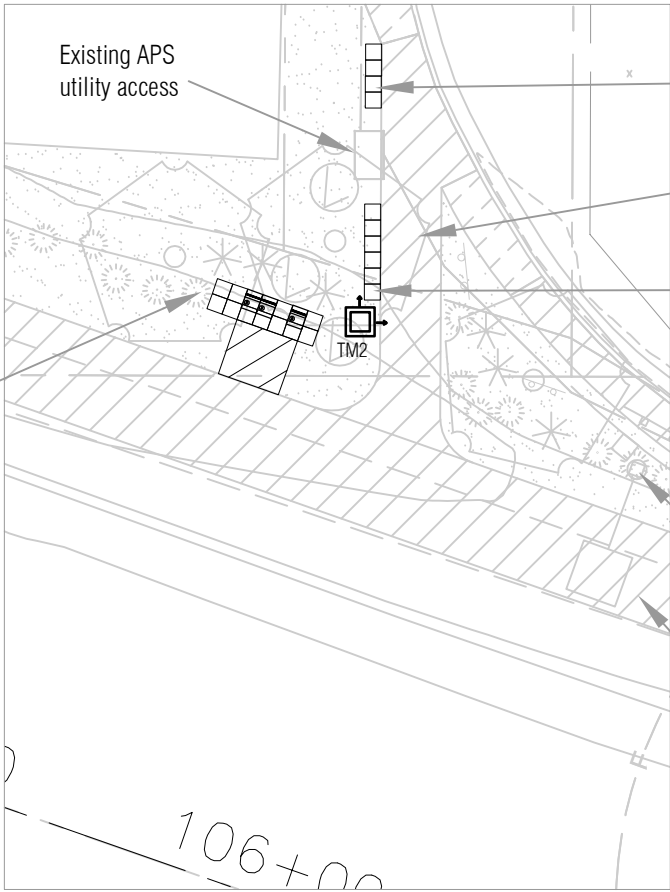


Existing  
barricades typ.

Landscaping proposed  
as clusters around  
Integrated Art areas.  
Shade trees proposed  
to flank seating  
locations.

New Pathway typ.

Area Plan near  
Station 103, end  
of 9th Street  
1"=20'



Existing APS  
utility access

New Integrated Art Pavers  
(4) north of APS utility  
access

New Neighborhood  
Connection

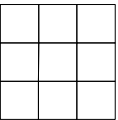
New Integrated Art Pavers  
(6) south of APS utility  
access

New Light Pole typ.

New Pathway typ.

Area Plan near  
Station 106, end  
of 10th Street  
1"=20'

Integrated Art Site Layout Key



20"x20" Sculpted Pavers  
See sheet 136 for detail



Bench Seat with Back (B Element)  
See sheet 133 for detail



Bench Seat without Back (S Element)  
See sheet 134 for detail



Low Wall W1 Element  
See sheet 135 for detail



Low Wall W2 Element  
See sheet 135 for detail



Low Wall W3 Element  
See sheet 135 for detail

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	

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engineers | planners | scientists

T.Y. LIN INTERNATIONAL  
CONSULTING ENGINEER

DES: MSI	DR: MSI	CK: MSI	DATE: 9/16
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Michael Singer Inc.

Studio North - Ph: 802-464-2165  
POBox 682, Wilmington, VT 05363

Studio South - Ph: 561-865-7683  
321 NW 1st Ave, Delray Beach, FL 33444

www.michaelsinger.com

Phoenix Grand Canal Integrated Art  
Site Plan Layout Integrated Art Elements near  
Stations 103 (9th Street) and 106 (10th Street)

Notes:

- Integrated Art Elements have been located with feedback from the Salt River Project (SRP), Arizona Public Service Company (APS), City of Phoenix Departments including Utilities, Water Services, Streets, and Arts and Culture, and the TY Lin Design Team.
- This drawing is intended to show the number and layout of Art Elements only, all other data is shown for reference only. All engineering drawings, details and requirements supersede Integrated Art Drawings. Any conflicts between such drawings should be clarified in a Request for Information.
- See sheets 129 - 142 for details on all Integrated Art Elements B, S, W1, W2, W3, TM1, TM2, TM3, Pavers, and Shade Structures. All Art Elements shown with nominal dimensions.
- All Integrated Artwork is shown outside of the 20' SRP maintenance zone. Where necessary pathway paving is shown as extended from the main pathway to join with the Artwork outside of the 20' zone. All Integrated Artwork elements (other than pavers) are shown at least 6' away from existing water and sewer lines. All measurements rely on the accuracy of base survey data.
- Any changes to the layout of Integrated Art Elements requires approval by the Artist Michael Singer, TY LIN, and the City of Phoenix. Landscape layout may be revised by Gavan and Barker Landscape Architects if there are any modifications to the Integrated Art layout.
- This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34".

Call at least two full working days before you begin excavation.

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In Maricopa County: (602) 263-1100

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
**UPTOWN AND GATEWAY NORTH**

**INTEGRATED ART DRAWINGS**

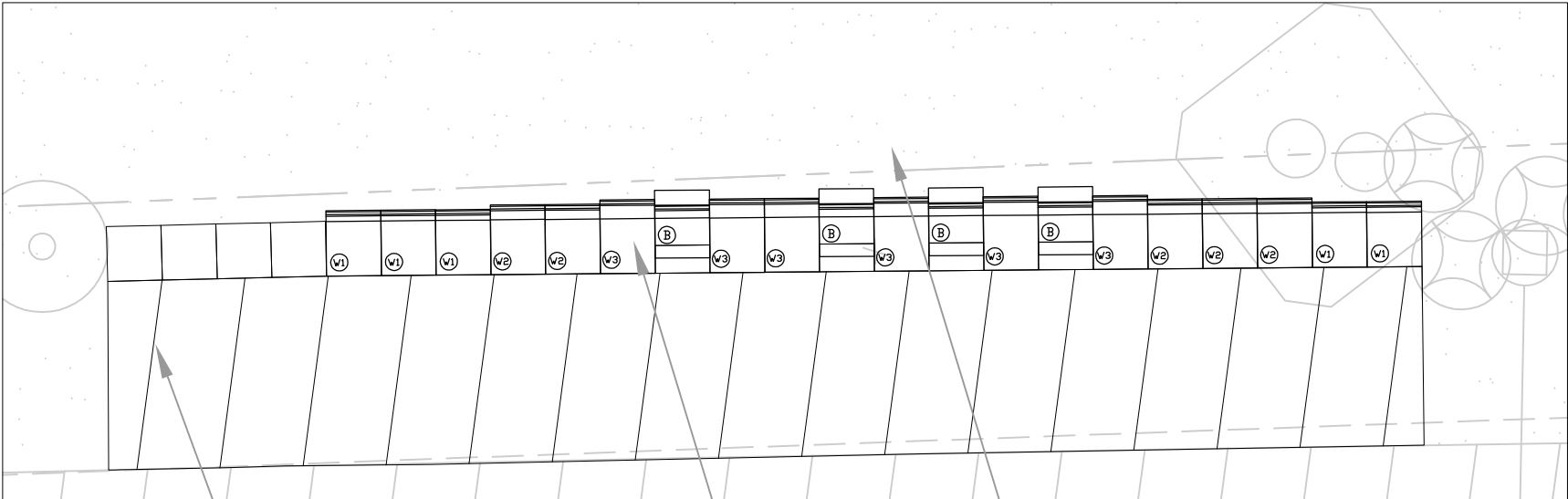
DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	124	153

SCALE: As Noted (otherwise NTS)

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REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE



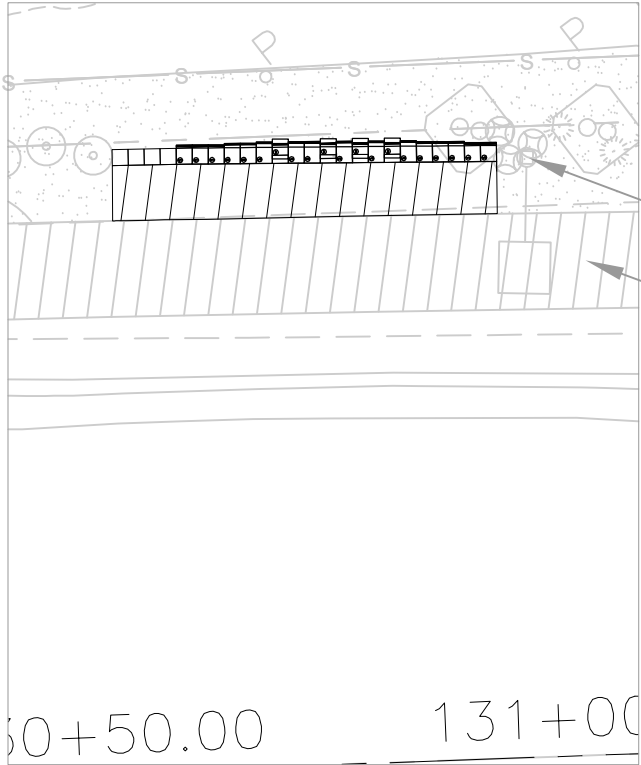
Detail Plan at  
Stations 130.5 -131  
3/16" = 1'



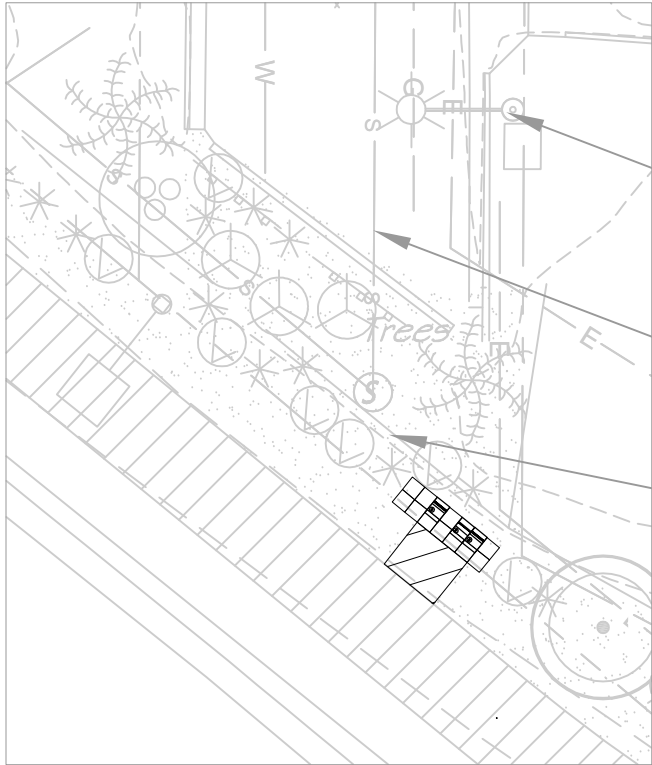
Pathway extension to the edge  
of the 20' SRP maintenance  
zone to connect to Integrated Art

Integrated Art area including low  
wall elements (W elements), and  
bench elements (B only). See  
section details for this condition on  
sheets 135 -136.

While physical space is available, grading and  
landscaping in this location requires a future easement  
and is therefore NOT included in the project at this time.  
This note is provided for future reference only.



Area Plan at  
Stations 130.5 -131  
1" = 20'



Area Plan at  
Station 134.5,  
13th Place  
1" = 20'



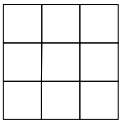
Detail Plan at Station  
134.5, 13th Place  
3/16" = 1'



Integrated Art areas including  
sculpted paving and S and B bench  
elements. See sheets 133 and 134  
for more information.

Pathway extension to the edge  
of the 20' SRP maintenance  
zone to connect to Integrated Art

#### Integrated Art Site Layout Key



20"x20" Sculpted Pavers  
See sheet 136 for detail



Bench Seat with Back (B Element)  
See sheet 133 for detail



Bench Seat without Back (S Element)  
See sheet 134 for detail



Low Wall W1 Element  
See sheet 135 for detail



Low Wall W2 Element  
See sheet 135 for detail



Low Wall W3 Element  
See sheet 135 for detail

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	

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T.Y. LIN INTERNATIONAL

CONSULTING ENGINEER

DES: MSI	DR: MSI	CK: MSI	DATE: 9/16
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Phoenix Grand Canal Integrated Art  
Site Plan Layout Integrated Art Elements at  
Stations 130.5 and 134.5 (13th Place)

Notes:  
1. Integrated Art Elements have been located with feedback from the Salt River Project (SRP), Arizona Public Service Company (APS), City of Phoenix Departments including Utilities, Water Services, Streets, and Arts and Culture, and the TY Lin Design Team.  
2. This drawing is intended to show the number and layout of Art Elements only, all other data is shown for reference only. All engineering drawings, details and requirements supersede Integrated Art Drawings. Any conflicts between such drawings should be clarified in a Request for Information.  
3. See sheets 129 - 142 for details on all Integrated Art Elements B, S, W1, W2, W3, TM1, TM2, TM3, Pavers, and Shade Structures. All Art Elements shown with nominal dimensions.  
4. All Integrated Artwork is shown outside of the 20' SRP maintenance zone. Where necessary pathway paving is shown as extended from the main pathway to join with the Artwork outside of the 20' zone. All Integrated Artwork elements (other than pavers) are shown at least 6' away from existing water and sewer lines. All measurements rely on the accuracy of base survey data.  
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6. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34".

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CITY OF PHOENIX, ARIZONA

STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1

UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	125	153

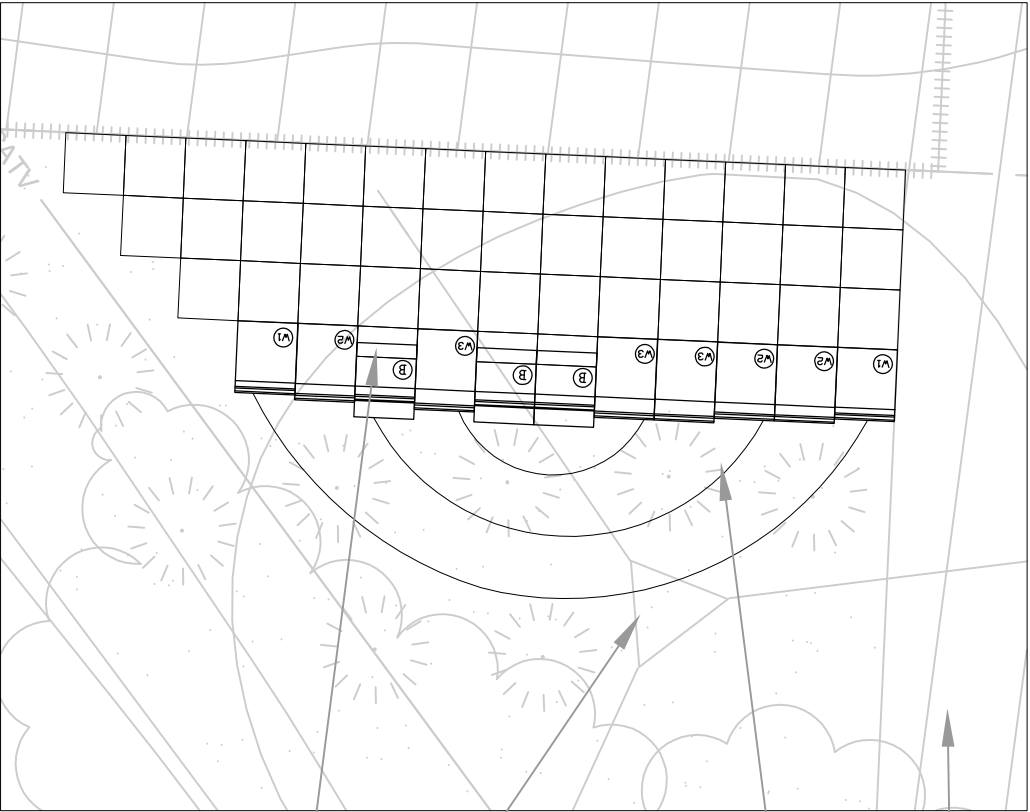
SCALE: As Noted (otherwise NTS)

ST87600074 DECEMBER 2015

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REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE

REVISION BY CITY OF PHOENIX		
NO.	DESCRIPTION	REV BY / CKD BY / DATE



Detail Plan at 37th Street  
Gateway North near Station 34  
3/16" = 1'

Proposed tree to the south  
provides shade for Integrated  
Art areas .

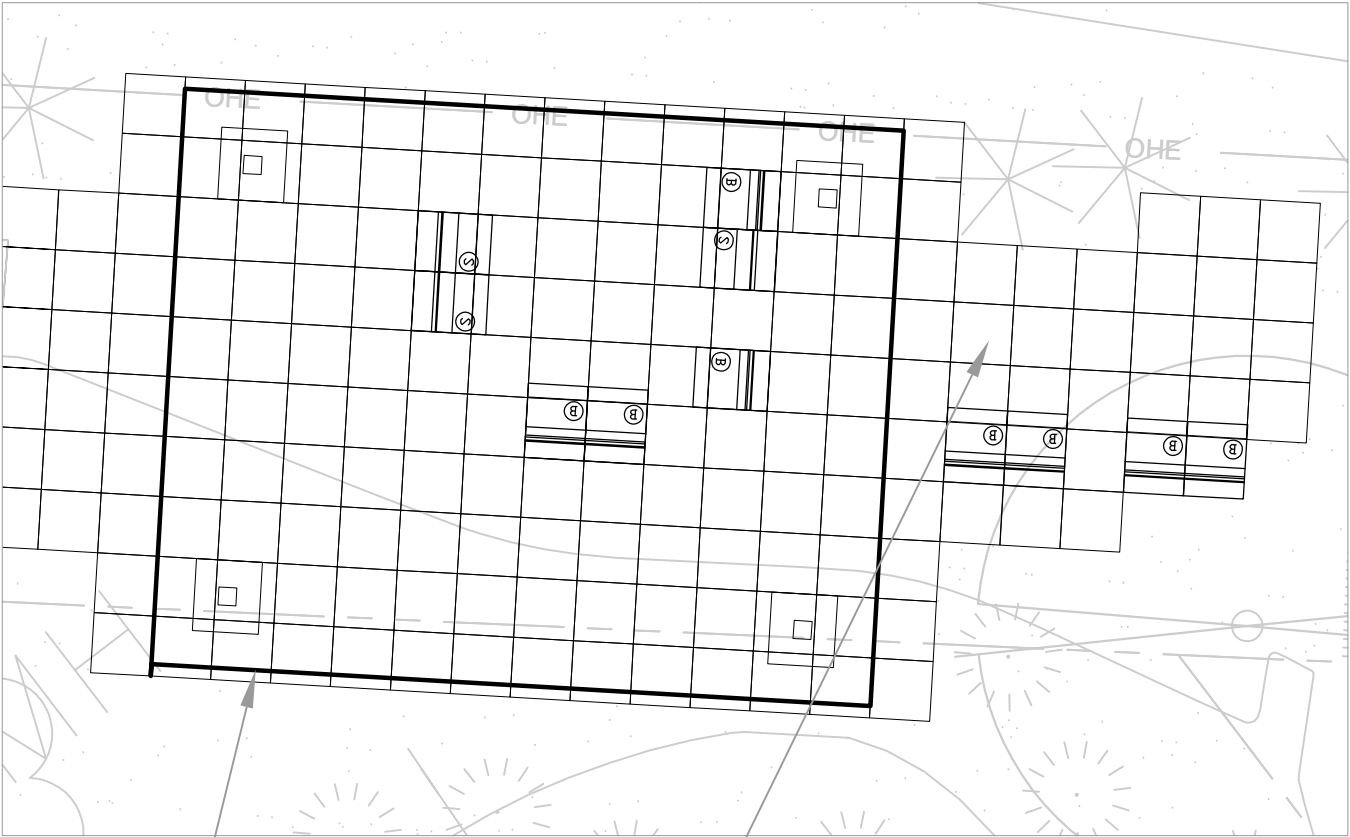
Proposed grading up to 16" from  
paver level and retained by low  
Integrated Art wall comprised of B  
and W Art Elements.

Integrated Art area including low wall elements  
(W elements), pavers, and bench elements (B  
only). See section details for this condition on  
sheets 135-136.



Existing fence line

37th Street neighborhood connection (proposed)

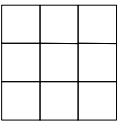


Sculpted Shade Structure (16'x20'  
canopy outline indicated) with sculpted  
paving and S and B bench elements  
below. See sheets 131-132 for  
elevations and additional detail on 37th  
Street Shade Structure.

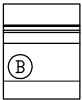
Integrated Art area including sculpted paving and  
bench elements (B only) associated with Sculpted  
Shade Structure. See sheet 133 for additional  
information.

Detail Plan at 37th Street  
Gateway North Station 34.5  
3/16" = 1'

Integrated Art Site Layout Key



20'x20' Sculpted Pavers  
See sheet 136 for detail



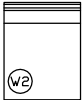
Bench Seat with Back (B Element)  
See sheet 133 for detail



Bench Seat without Back (S Element)  
See sheet 134 for detail



Low Wall W1 Element  
See sheet 135 for detail



Low Wall W2 Element  
See sheet 135 for detail



Low Wall W3 Element  
See sheet 135 for detail

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	

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Phoenix Grand Canal Integrated Art  
Site Plan Layout  
Integrated Art Elements at 37th Street  
Gateway North Stations 34 - 35

Notes:

1. Integrated Art Elements have been located with feedback from the Salt River Project (SRP), Arizona Public Service Company (APS), City of Phoenix Departments including Utilities, Water Services, Streets, and Arts and Culture, and the TY Lin Design Team.

2. This drawing is intended to show the number and layout of Art Elements only, all other data is shown for reference only. All engineering drawings, details and requirements supersede Integrated Art Drawings. Any conflicts between such drawings should be clarified in a Request for Information.

3. See sheets 129 - 142 for details on all Integrated Art Elements B, S, W1, W2, W3, TM1, TM2, TM3, Pavers, and Shade Structures. All Art Elements shown with nominal dimensions.

4. All Integrated Artwork is shown outside of the 20' SRP maintenance zone. Where necessary pathway paving is shown as extended from the main pathway to join with the Artwork outside of the 20' zone. All Integrated Artwork elements (other than pavers) are shown at least 6' away from existing water and sewer lines. All measurements rely on the accuracy of base survey data.

5. Any changes to the layout of Integrated Art Elements requires approval by the Artist Michael Singer, TY LIN, and the City of Phoenix. Landscape layout may be revised by Gavan and Barker Landscape Architects if there are any modifications to the Integrated Art layout.

6. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34".

Call at least two full working days before you begin excavation.

**ARIZONA 811**

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
**UPTOWN AND GATEWAY NORTH**

**INTEGRATED ART DRAWINGS**

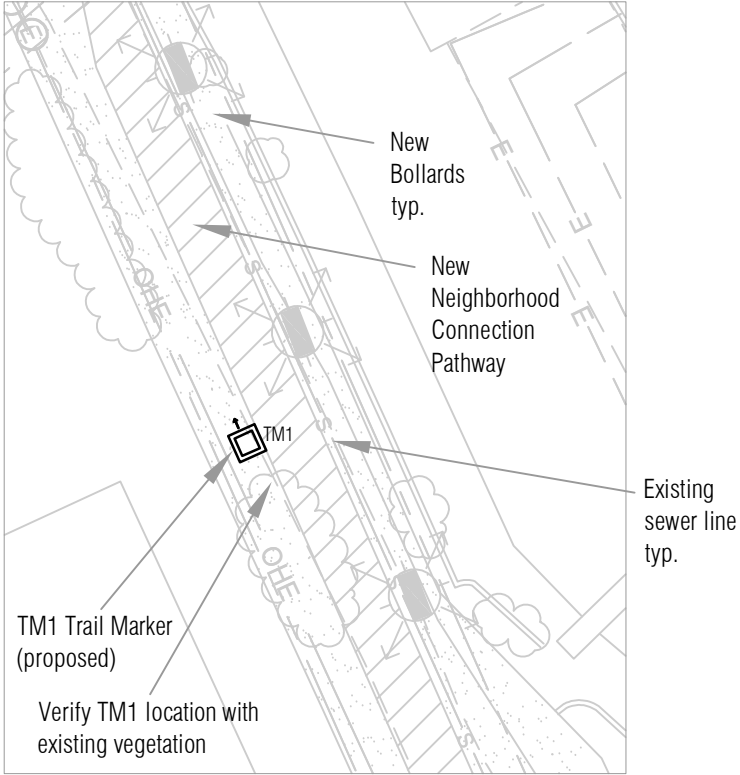
DR: MSI DATE: 09/16	DES: MSI DATE: 09/16	CK: MSI DATE: 09/16	SHEET NO: 126	TOTAL SHEETS 153
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SCALE: As Noted (otherwise NTS)

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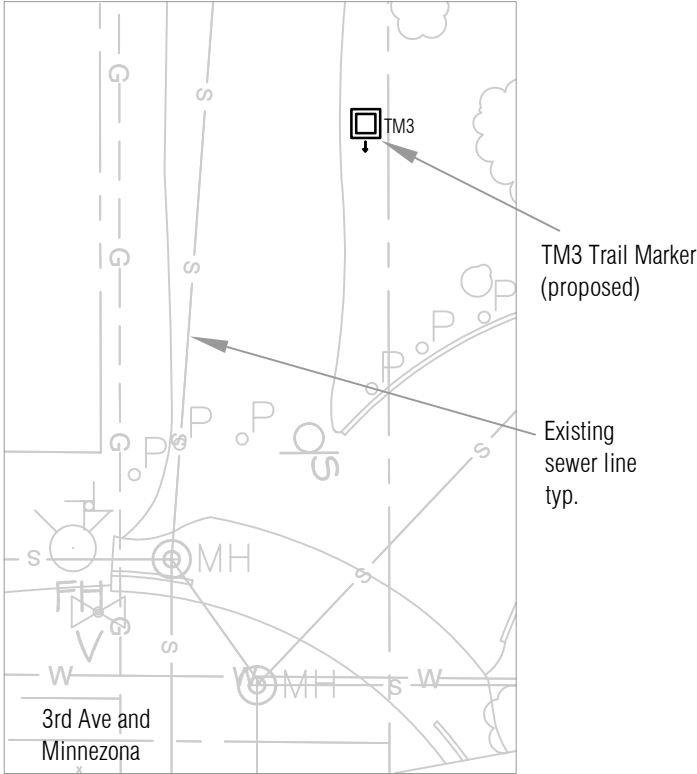
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NO.	DESCRIPTION	REV BY [CKD BY] DATE



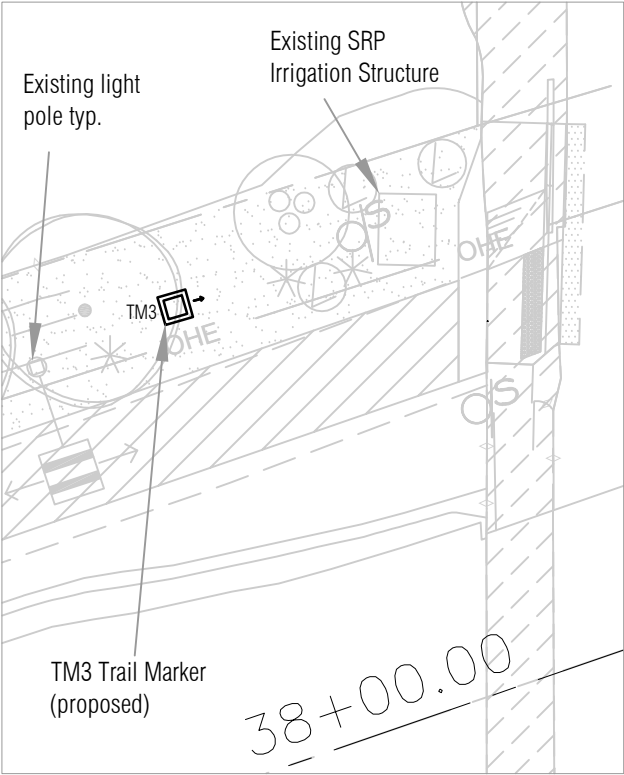
Trail Marker near 9th Ave and Campbell - Alley Neighborhood Connection (Station 32.5)

TM1 located within alley, over 6' away from existing sewer line.



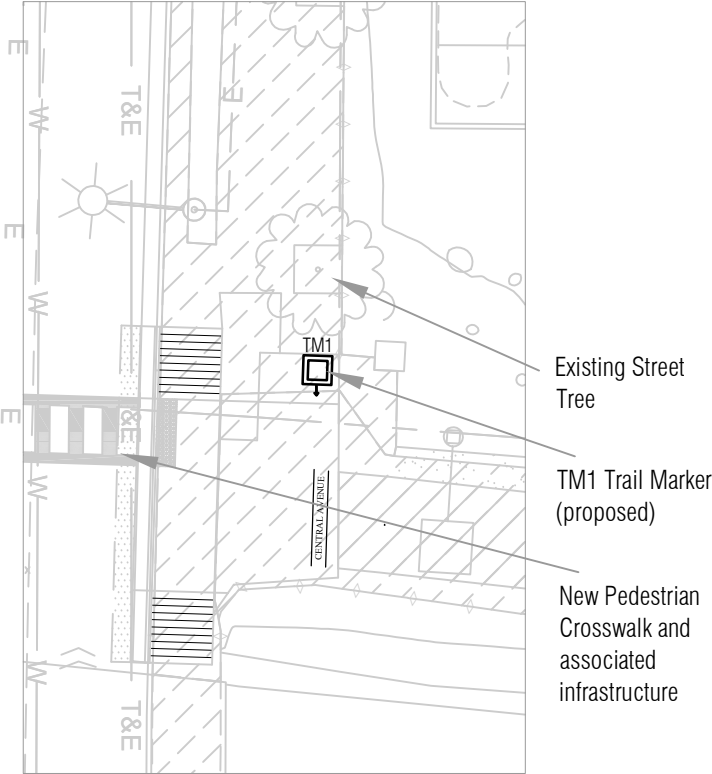
Trail Marker at 3rd Ave Bridge (Station 52) - South Side

TM3 located over 10' east from the existing sewer line. Proposed within City right-of-way, and with a 50' clearance from nearby APS power poles.



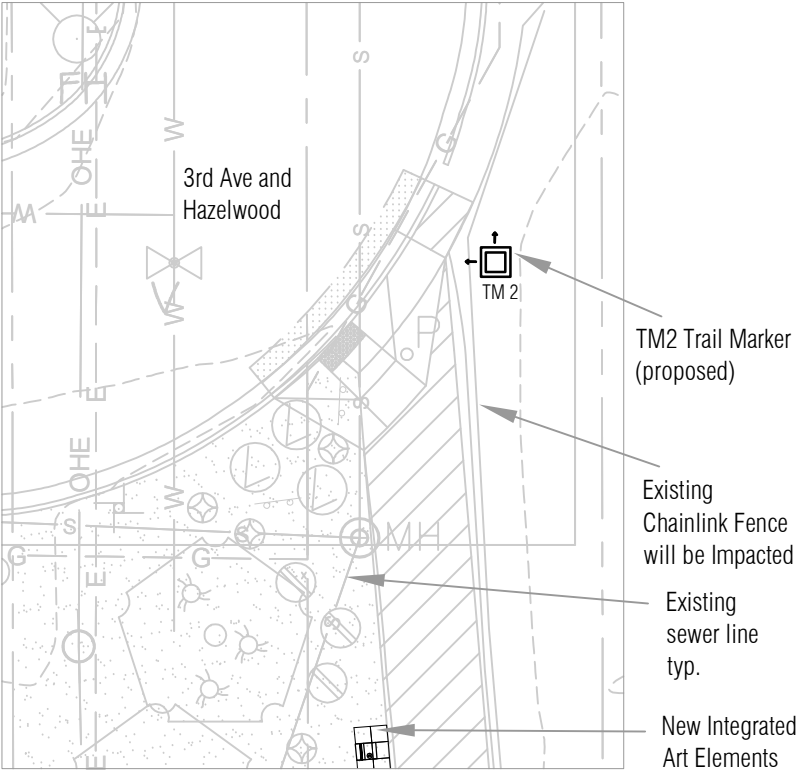
Trail Marker at N 7th Ave - West Side (Station 38)

TM3 has been sited to be 20' west of the SRP irrigation structure as well as 50' away from the nearby APS power pole.



Trail Marker at Central Ave - East Side (Station 66)

TM1 located in the City right-of-way directly adjacent to the SRP right-of way. Location to be coordinated to minimize disturbance to nearby tree.



Trail Marker at 3rd Ave Bridge (Station 52) - North Side

TM2 located over 10' east from existing sewer line and with a 50' clearance from APS power poles. The proposed placement is within the City right-of-way, though it is in conflict with an existing chainlink fence.

NORTH  
All detail plans shown at 1" = 20'

Integrated Art Site Layout Key




F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	

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engineers | planners | scientists

**T.Y. LIN INTERNATIONAL**  
CONSULTING ENGINEER

DES: MSI	DR: MSI	CK: MSI	DATE: 9/16	
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**Michael Singer Studio**

Michael Singer Inc.

Studio North - Ph: 802-464-2165  
POBox 682, Wilmington, VT 05363

Studio South - Ph: 561-865-7683  
321 NW 1st Ave, Delray Beach, FL 33444

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Phoenix Grand Canal Integrated Art Site Plan Layout  
Proposed Trail Marker Locations - sheet 1 of 2

Notes:

- Integrated Art Elements have been located with feedback from the Salt River Project (SRP), Arizona Public Service Company (APS), City of Phoenix Departments including Utilities, Water Services, Streets, and Arts and Culture, and the TY Lin Design Team.
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- Any changes to the layout of Integrated Art Elements requires approval by the Artist Michael Singer, TY LIN, and the City of Phoenix. Landscape layout may be revised by Gavan and Barker Landscape Architects if there are any modifications to the Integrated Art layout.
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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

DR: MSI DATE: 09/16	DES: MSI DATE: 09/16	CK: MSI DATE: 09/16	SHEET NO: 127	TOTAL SHEETS 153
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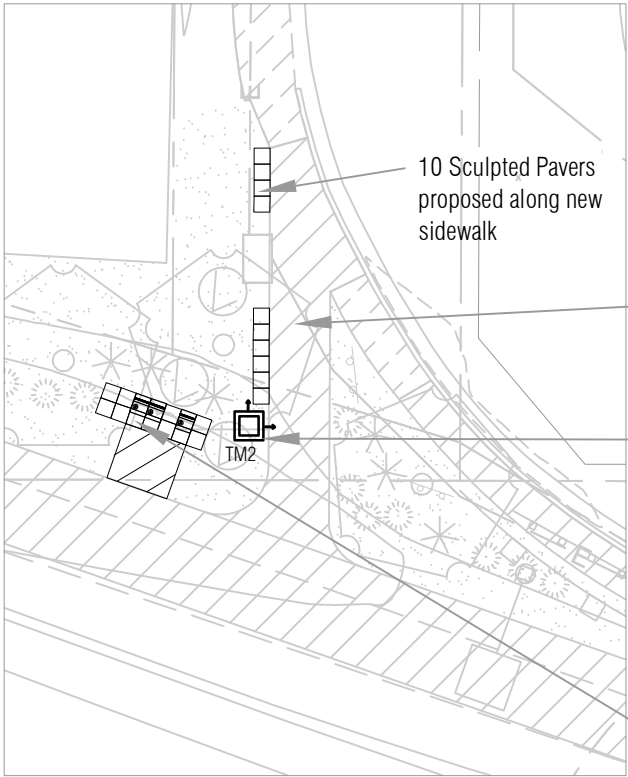
SCALE: As Noted (otherwise NTS)

ST87600074 DECEMBER 2015

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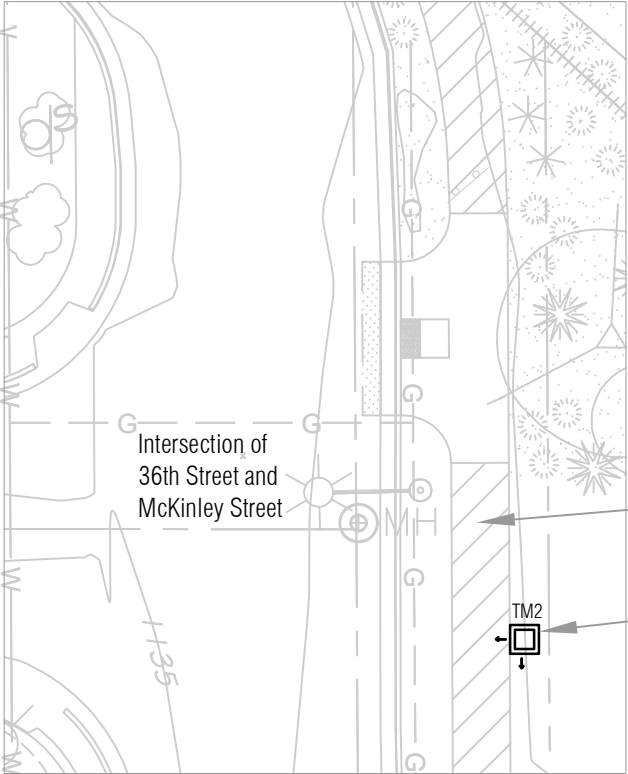
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NO.	DESCRIPTION	REV BY [CKD BY] DATE



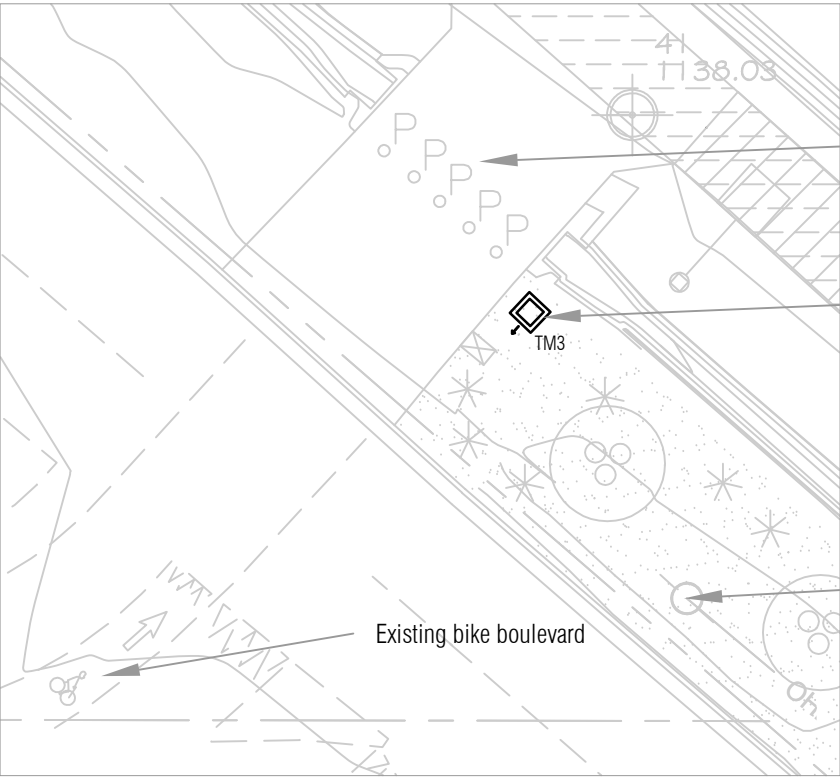
Trail Marker at N 10th Street Bridge (Station 106) - North Side

This TM 2 is placed to be visible from 10th Street and Campbell Ave. 10 Integrated Art sculpted pavers are proposed at this neighborhood connection.



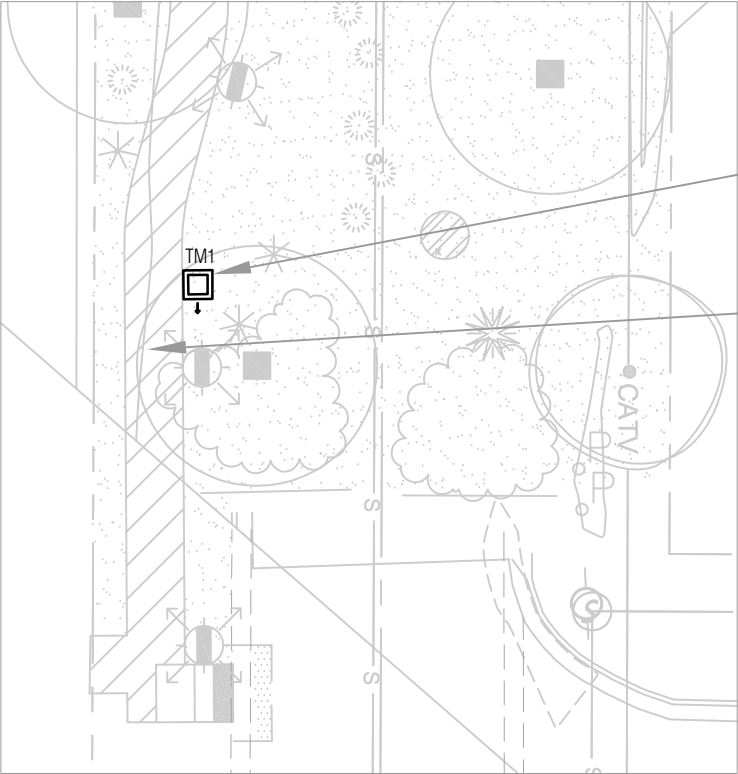
Trail Marker at the end of 36th Street (Near Station 26.5)

TM2 located at the intersection of McKinley Street and 36th Street with visbily from the front of the nearby school. Location is over 10' away from existing gas line.



Gateway North Trail Marker at the end of E Garfield Street (Near Station 21.5)

TM3 located at the end of the Garfield Street Bike Boulevard. Trail Marker could shift further east in order to maximize visibility from Garfield, but is currently shown closer to the actual crossing. 10' clearance from APS guy wire has been maintained.



Trail Marker at the End of 37th Street (Near Station 35)

TM1 located along new neighborhood connection with 50' clearance from nearby APS power pole. Location may adjust pending final lighting layout (bollards or poles).

Existing crossing over culvert with bollards

TM3 Trail Marker (proposed)

Existing power pole (light pole only)

TM1 Trail Marker (proposed)

New Sidewalk Neighborhood Connection



All detail plans shown at 1"=20'

Integrated Art Site Layout Key



Trail Marker (TM1, TM2, TM3)  
See sheets 137-142 for details.  
Arrow indiactes direction of decorative light aperture(s)

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		-	
T.Y. LIN INTERNATIONAL engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: MSI		DR: MSI	CK: MSI	DATE: 9/16	



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Phoenix Grand Canal Integrated Art Site Plan Layout  
Proposed Trail Marker Locations - sheet 2 of 2

- Notes:
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  3. See sheets 129 - 142 for details on all Integrated Art Elements B, S, W1, W2, W3, TM1, TM2, TM3, Pavers, and Shade Structures. All Art Elements shown with nominal dimensions.
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  5. Any changes to the layout of Integrated Art Elements requires approval by the Artist Michael Singer, TY LIN, and the City of Phoenix. Landscape layout may be revised by Gavan and Barker Landscape Architects if there are any modifications to the Integrated Art layout.
  6. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34".



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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

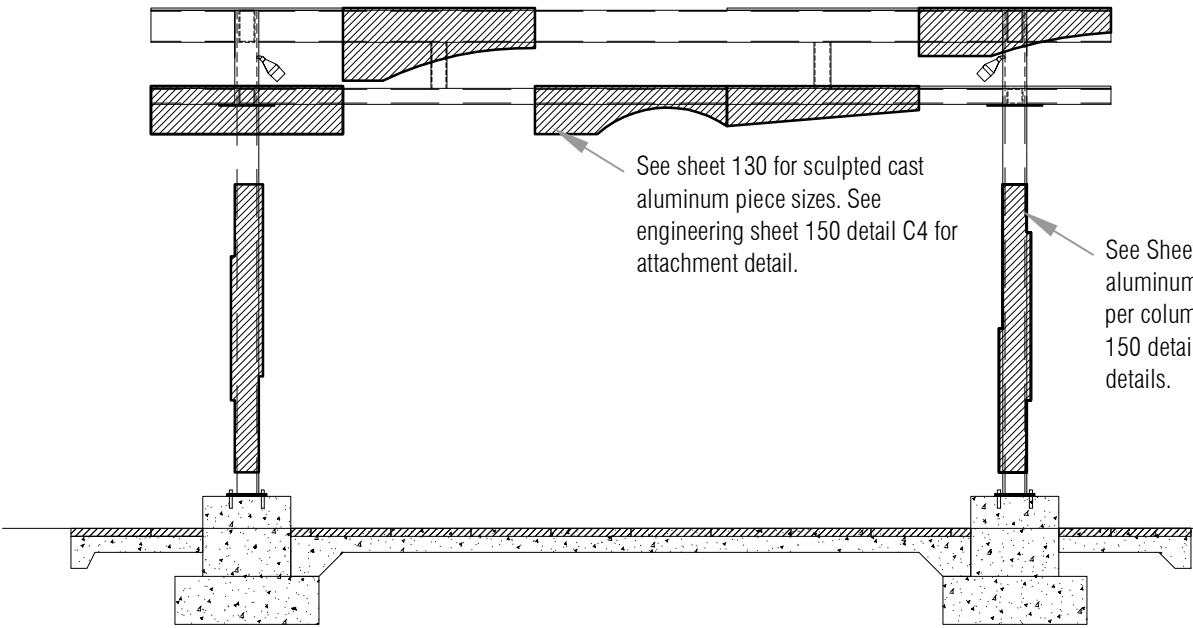
DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	128	153
SCALE: As Noted (otherwise NTS)				

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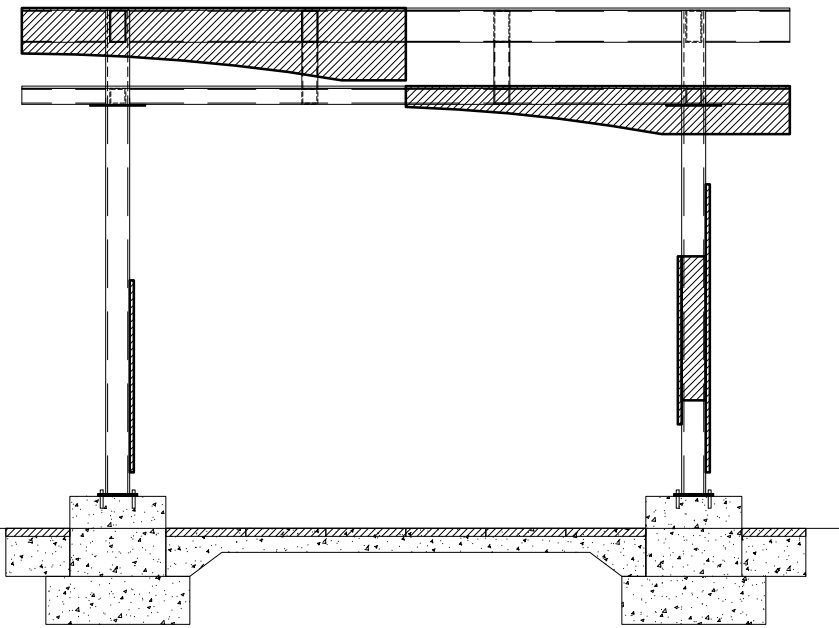
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REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

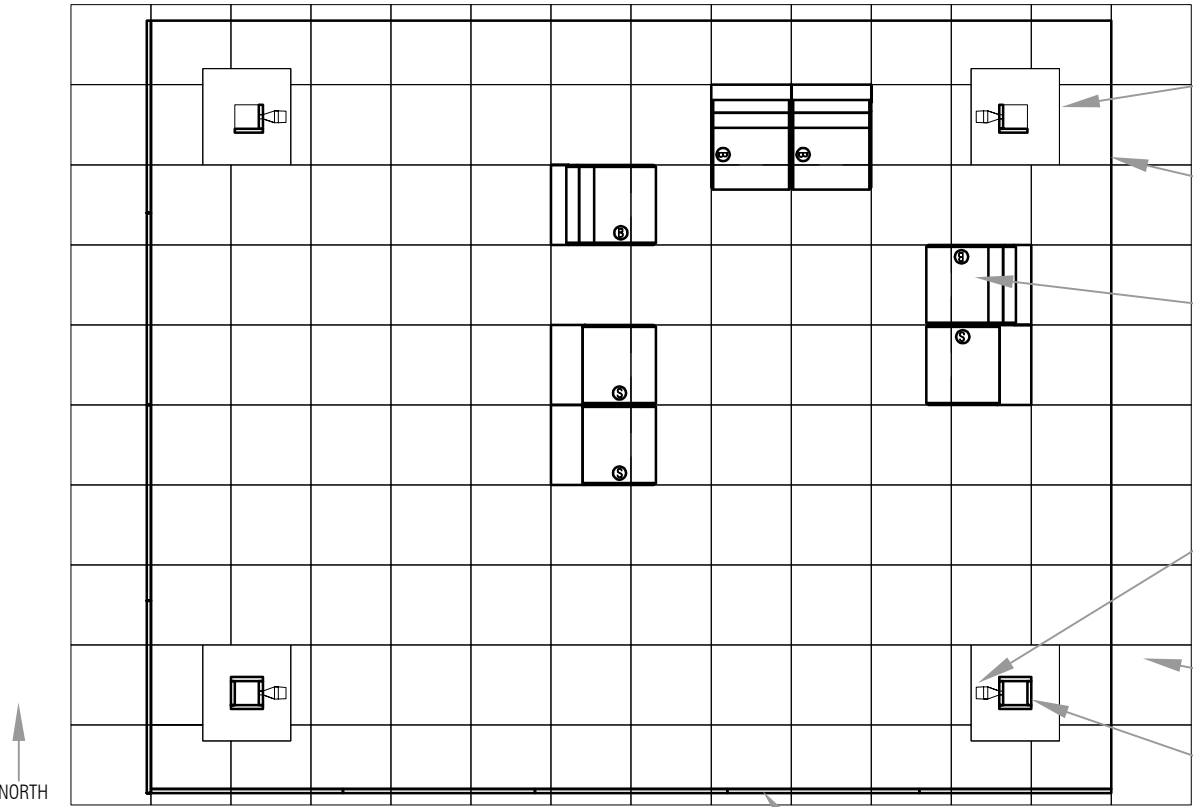
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



Sculpted Shade Structure - Front / South Elevation  
1/4" = 1' See engineering sheets 143-151 for all dimensions and details



Sculpted Shade Structure - Side / West Elevation  
1/4" = 1' See engineering sheets 143-151 for all dimensions and details



Sculpted Shade Structure  
Plan 1/4" = 1'  
See engineering sheets 143-151 for all dimensions and details

Sculpted pavers cut on site to align with exposed foundation footing, typ. all 4 locations. See engineering sheet 149 for foundation details.

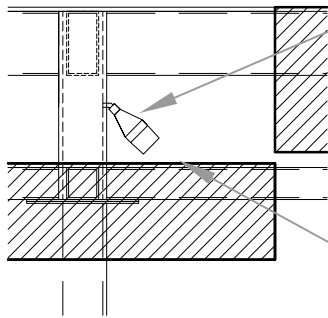
Outline of canopy - see Sheet 130 for layout of perforated aluminum sheets

S and B sculpted bench elements, see sheets 133 and 134, and engineering sheet 152 for additional details.

4 light fixture locations on column inside faces. At SW and NE corners light fixture will be oriented to cast light on perforated aluminum panel at lower level. Projection of pattern at grade will depend on surrounding light levels. See detail right.

20" x 20" P1 Sculpted Pavers (see sheet 136)

Sculpted cast aluminum panels attached to shade structure columns. Shown on 4 sides of the south/front columns and 2 sides of north/ back columns. See 130 for piece sizes and layout.



Sculpted Shade Structure  
Lighting Detail Elevation  
1/2" = 1'

Vista Lighting 1043 fixture attached to column. See electrical engineering drawing SE3.3 (sheet 117) for details.

At SW and NE corners the perforated aluminum canopy sheets are below the light fixture- allowing light to project through the pattern (depending on surrounding light levels).

Vista Lighting 1043 fixture:  
1043-P-MF-30-D-MV-ND  
LED 600-750 lumens, medium flood, 3000K light temp  
Model 3107 could be used if low-voltage is required  
See electrical engineering drawings SE3.3 (sheet 117) for further information.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074			
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DES: MSI	DR: MSI	CK: MSI	DATE: 9/16		



Phoenix Grand Canal Integrated Art  
Sculpted Shade Structure near 9th Ave

Notes:  
1. All engineering details and specifications supersede Integrated Art Drawings. Aluminum Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.

2. See engineering drawings for all standards, materials and specifications. All visible welds must be architectural welds with a sample weld approved by Artist and EOR prior to full fabrication.

3. Shade Structure shown is specific to the location near 9th Ave and Campbell in the Uptown portion of the project..

4. Sculpted cast aluminum panels to be provided to aluminum fabricator by Artist. Cast aluminum to be attached to structural aluminum at fabrication shop per engineering details C1-C4 on sheet 150 and C3-C4 on sheet 151 or an EOR , Artist, and Client approved alternative. Sample panel attachments must be approved by Artist and EOR prior to full fabrication.

5. All sides of all columns and beams, and the underside and sides of the canopy 1/2" sheets are to have a dual action (DA) sanded finish. Finish may be omitted where sculpted cast aluminum panels are to be attached.

6. All exposed tube ends are to be closed with a clean architectural finish.

7. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.



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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	129	153
SCALE: N.T.S. or as noted				

ST87600074, DECEMBER, 2015



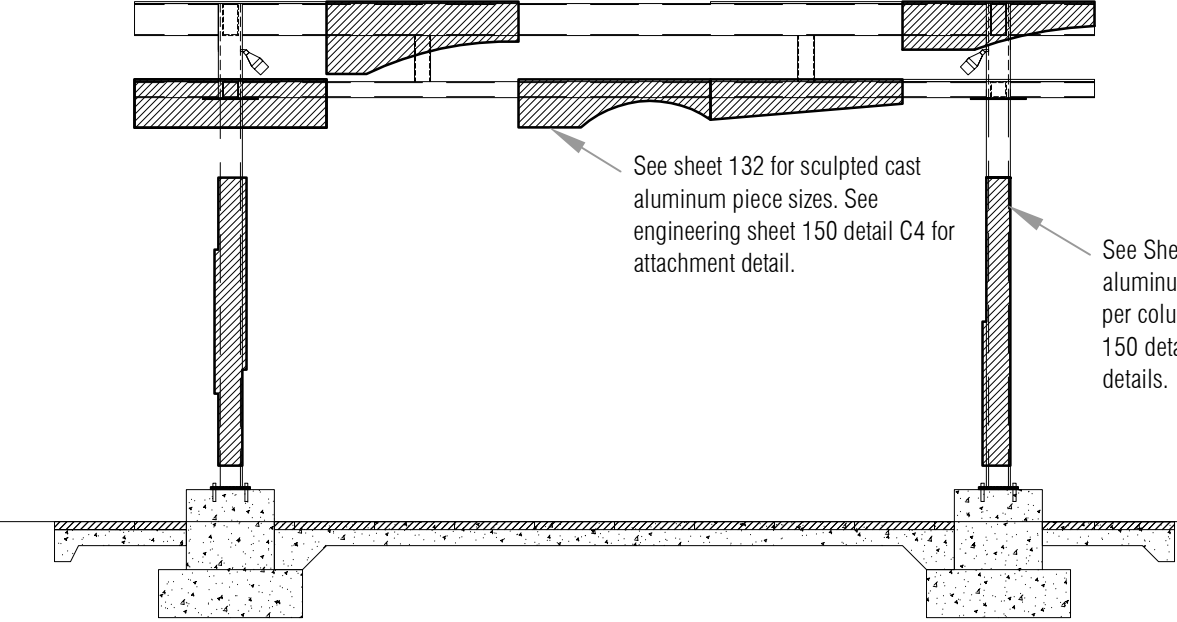


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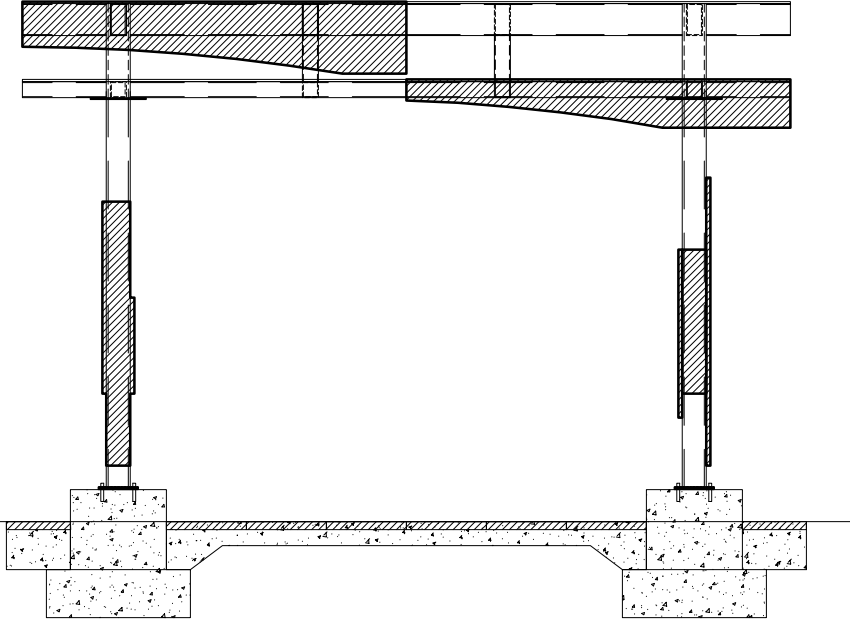
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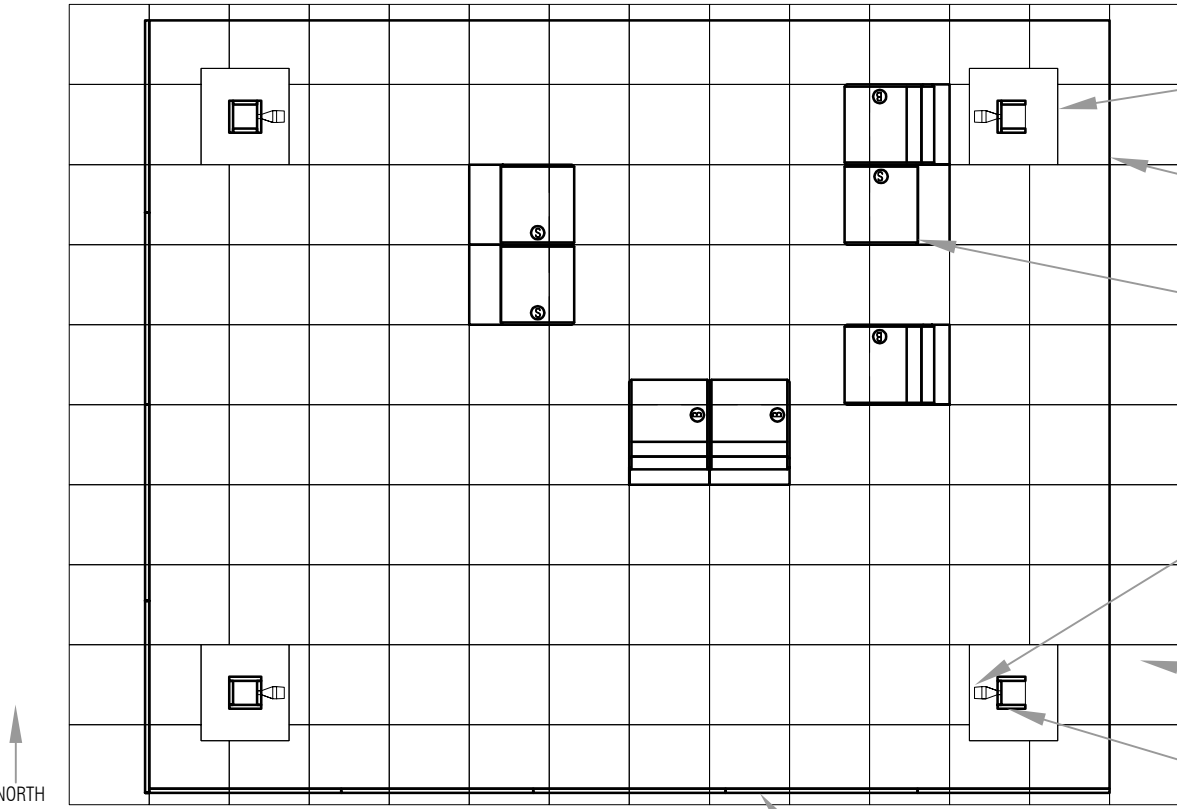
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



Sculpted Shade Structure - South Elevation  
1/4" = 1' See engineering sheets 143-151 for all dimensions and details



Sculpted Shade Structure - West Elevation  
1/4" = 1' See engineering sheets 143-151 for all dimensions and details



Sculpted Shade Structure  
Plan 1/4" = 1'  
See engineering sheets 143-151 for all dimensions and details

Sculpted pavers cut on site to align with exposed foundation footing, typ. all 4 locations. See engineering sheet 149 for foundation details.

Outline of canopy - see Sheet 132 for layout of perforated aluminum sheets

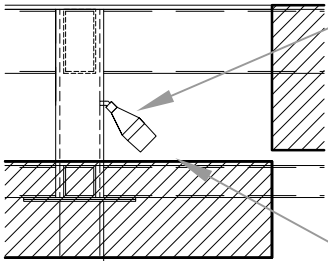
S and B sculpted bench elements, see sheets 133 and 134, and engineering sheet 152 for additional details.

4 light fixture locations on column inside faces. At SW and NE corners light fixture will be oriented to cast light on perforated aluminum panel at lower level. Projection of pattern at grade will depend on surrounding light levels. See detail right.

20" x 20" P1 Sculpted Pavers (see sheet 136)

Sculpted cast aluminum panels attached to shade structure columns. Shown on 4 sides of the south/front columns and 2 sides of north/ back columns. See 132 for piece sizes and layout.

Sculpted cast aluminum panels at upper and lower canopy levels. South and west faces only. See engineering detail C4 on sheet 150 for attachment detail.



Sculpted Shade Structure  
Lighting Detail Elevation  
1/2" = 1'

Vista Lighting 1043 fixture:  
1043-P-MF-30-D-MV-ND  
LED 600-750 lumens, medium flood, 3000K light temp  
Model 3107 could be used if low-voltage is required  
See electrical engineering drawings SE3.3 (sheet 117) for further information.

Vista Lighting 1043 fixture attached to column. See electrical engineering drawing SE3.3 (sheet 117) for details.

At SW and NE corners the perforated aluminum canopy sheets are below the light fixture- allowing light to project through the pattern (depending on surrounding light levels).

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074			

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engineers | planners | scientists  
DES: MSI    DR: MSI    CK: MSI    DATE: 9/16

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### Phoenix Grand Canal Integrated Art Sculpted Shade Structure at 37th Street

Notes:

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2. See engineering drawings for all standards, materials and specifications. All visible welds must be architectural welds with a sample weld approved by Artist and EOR prior to full fabrication.
3. Shade Structure shown is specific to the location at 37th Street in the Gateway North portion of the project.
4. Sculpted cast aluminum panels to be provided to aluminum fabricator by Artist. Cast aluminum to be attached to structural aluminum at fabrication shop per engineering details C1-C4 on sheet 150 and C3-C4 on sheet 151 or an EOR, Artist, and Client approved alternative. Sample panel attachments must be approved by Artist and EOR prior to full fabrication.
5. All sides of all columns and beams, and the underside and sides of the canopy 1/2" sheets are to have a dual action (DA) sanded finish. Finish may be omitted where sculpted cast aluminum panels are to be attached.
6. All exposed tube ends are to be closed with a clean architectural finish.
7. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.

Call at least two full working days before you begin excavation.

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
UPTOWN AND GATEWAY NORTH

**INTEGRATED ART DRAWINGS**

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	131	153

SCALE: N.T.S. or as noted

REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CHK BY	DATE
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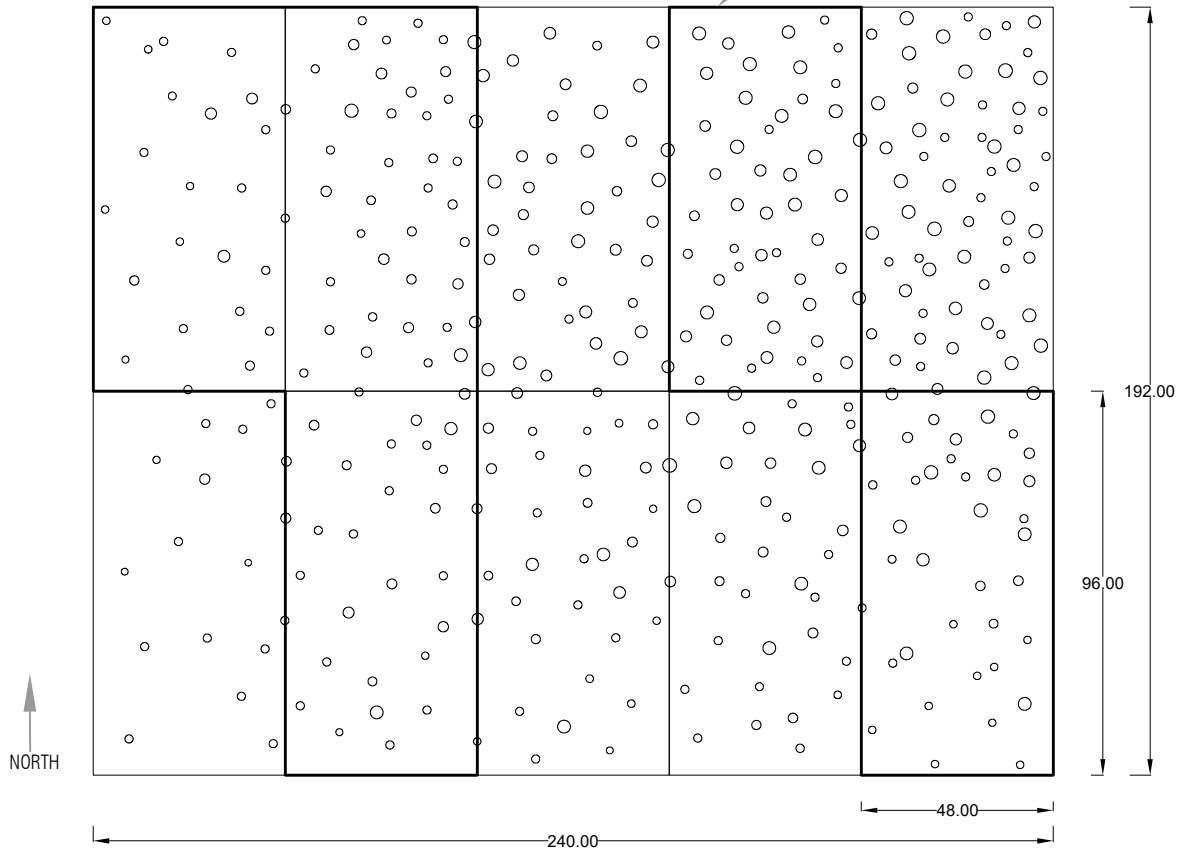
REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CHK BY	DATE
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REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CHK BY	DATE
NO.				

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

Bold outline indicates perforated aluminum sheets on upper level of structure; see engineering sheet 148.

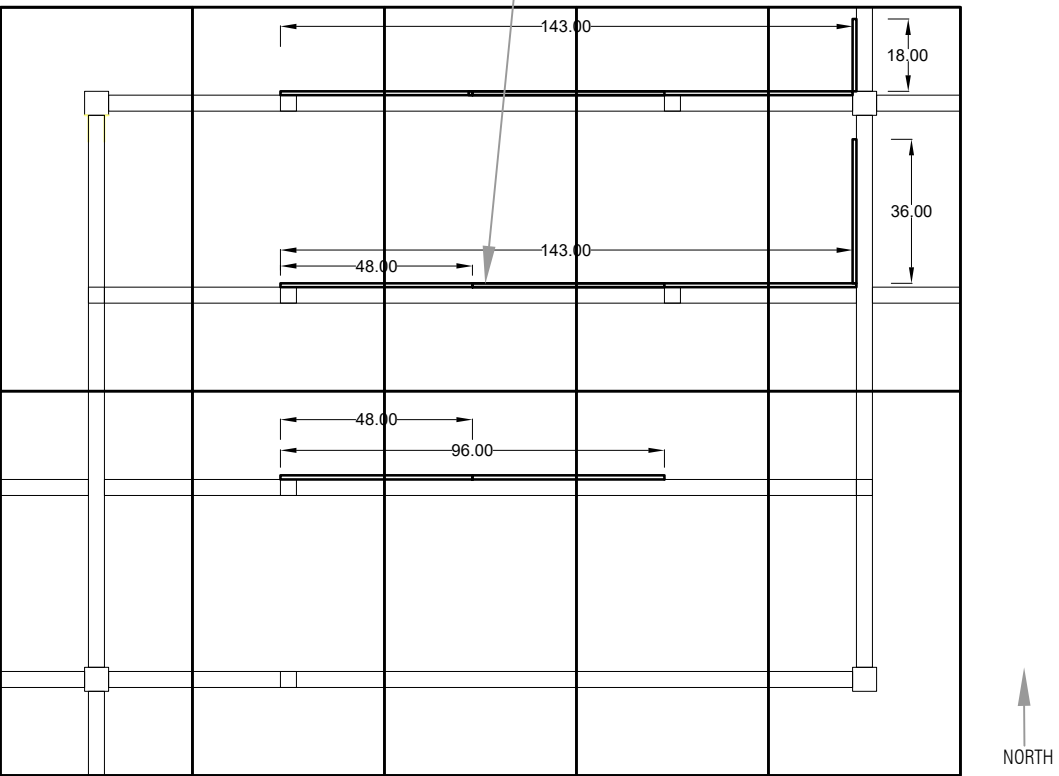
All sculpted cast aluminum for beams are 4" wide, 1" thick, by noted length



Sculpted Shade Structure

Perforated Aluminum Sheet Plan (cad file available for fabricator), 1/2" thick aluminum sheets

1/4" = 1' See engineering drawings for all details



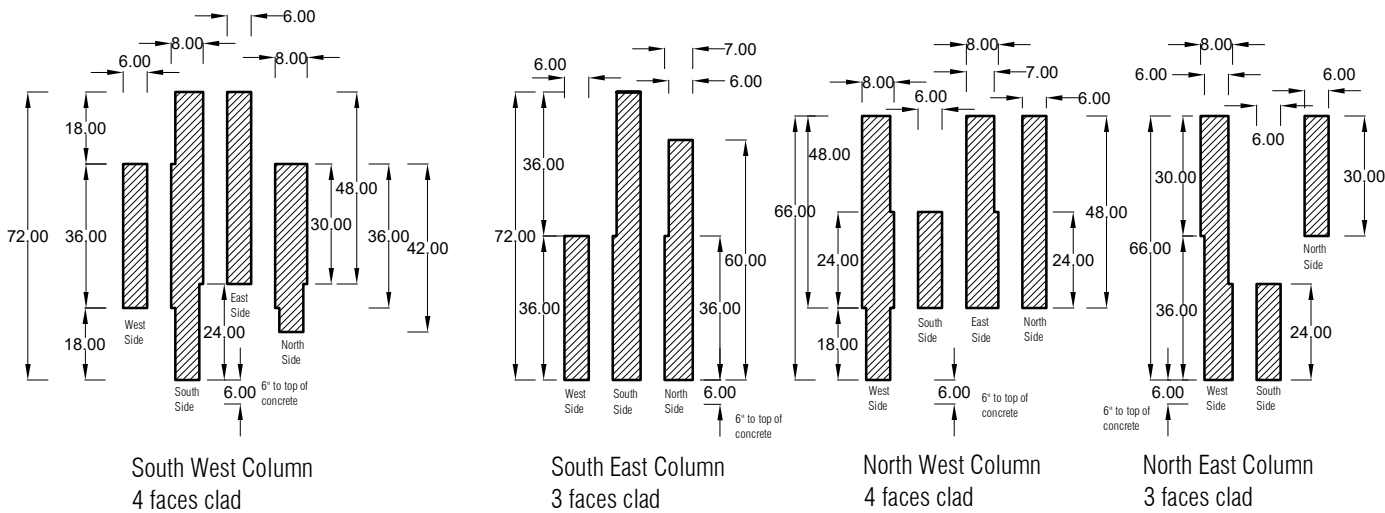
Sculpted Shade Structure - Sculpted Cast Aluminum Beam Details Plan

1/4" = 1' See engineering drawings for all dimensions and details; see details C3-C4 on engineering sheet 151 for attachment detail

Lengths vary, see plan above.  
May be provided in 48" segments.

Sculpted Cast Aluminum Beam Panels

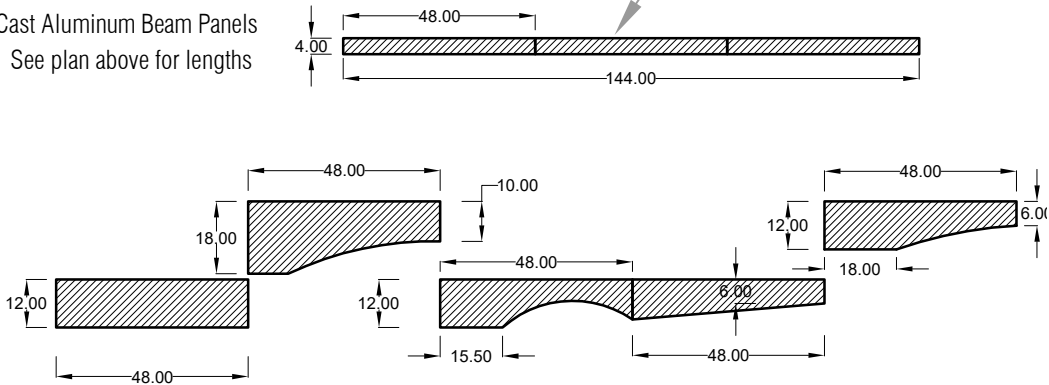
1/4" = 1' See plan above for lengths



Sculpted Cast Aluminum Column Panels - Elevations

1/4" = 1' See engineering sheet 150 details C1-C3 for attachment details.

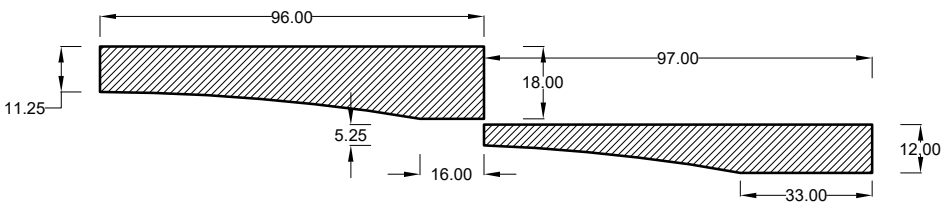
Note: All Sculpted Cast Aluminum is 1" thick maximum minus the sculpted relief. Typical thickness varies from 1/2" to 3/4" with 1/4" thickness being an absolute minimum thickness.



Sculpted Cast Aluminum Elevation Panels - South Elevation (see sheet 131)

1/4" = 1' Final shapes to be determined by artist not to exceed 48"x12"x1" for lower level or 48"x18"x1" for upper level panels.

See engineering detail C4 on sheet 150 for attachment detail.



Sculpted Cast Aluminum Elevation Panels - West Elevation (see sheet 131)

1/4" = 1' 8' cast aluminum may be sub-divided into 4' panels

Final shape to be determined by artist not to exceed 96" / 97" x 12" / 18" x 1" panels

See engineering detail C4 on sheet 150 for attachment detail.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074			
TY LIN INTERNATIONAL			T.Y. LIN INTERNATIONAL		
engineers   planners   scientists			CONSULTING ENGINEER		
DES: MSI	DR: MSI	CK: MSI	DATE: 9/16		



Phoenix Grand Canal Integrated Art  
Sculpted Shade Structure at 37th Street

Notes:

1. All engineering details and specifications supersede Integrated Art Drawings. Aluminum Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.

2. See engineering drawings for all standards, materials and specifications. All visible welds must be architectural welds with a sample weld approved by Artist and EOR prior to full fabrication.

3. Shade Structure shown is specific to the location at 37th Street in the Gateway North portion of the project.

4. Sculpted cast aluminum panels to be provided to aluminum fabricator by Artist. Cast aluminum to be attached to structural aluminum at fabrication shop per engineering details C1-C4 on sheet 150 and C3-C4 on sheet 151 or an EOR, Artist, and Client approved alternative. Sample panel attachments must be approved by Artist and EOR prior to full fabrication.

5. All sides of all columns and beams, and the underside and sides of the canopy 1/2" sheets are to have a dual action (DA) sanded finish. Finish may be omitted where sculpted cast aluminum panels are to be attached.

6. All exposed tube ends are to be closed with a clean architectural finish.

7. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.



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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

DR: MSI	DES: MSI	CK: MSI	SHEET NO.	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	132	153
SCALE: N.T.S. or as noted				

ST87600074, DECEMBER, 2015

REVISION BY	CITY OF PHOENIX	DESCRIPTION	REV BY	CHK BY	DATE
NO.					

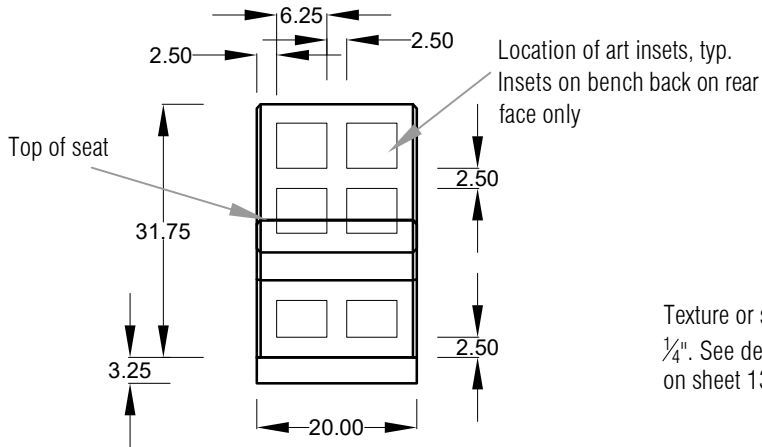
REVISION BY	CITY OF PHOENIX	DESCRIPTION	REV BY	CHK BY	DATE
NO.					

REVISION BY	CITY OF PHOENIX	DESCRIPTION	REV BY	CHK BY	DATE
NO.					

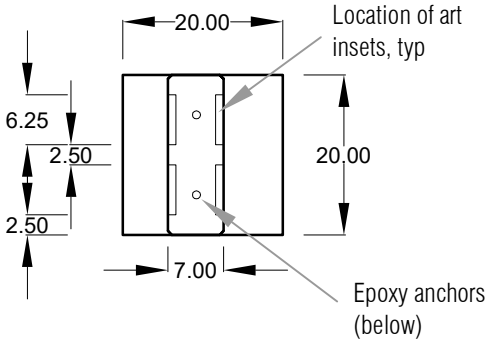
GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

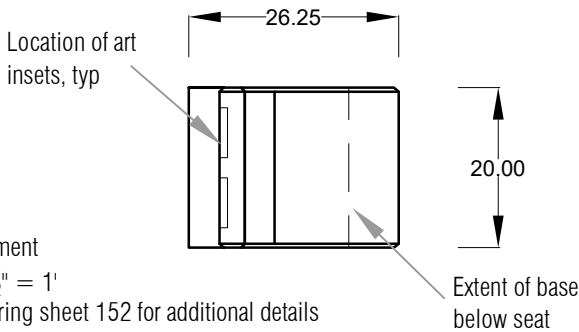
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



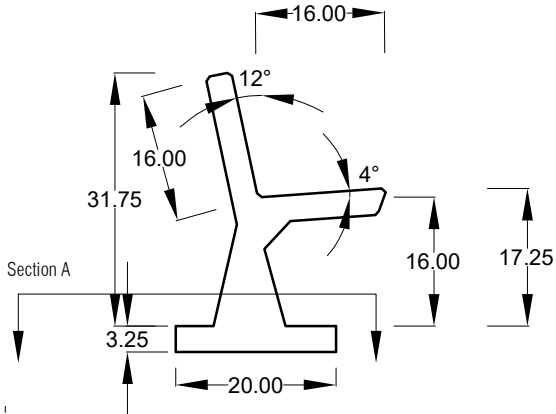
Bench B Element  
 Elevation  $\frac{1}{2}" = 1'$   
 See engineering sheet 152 for additional details



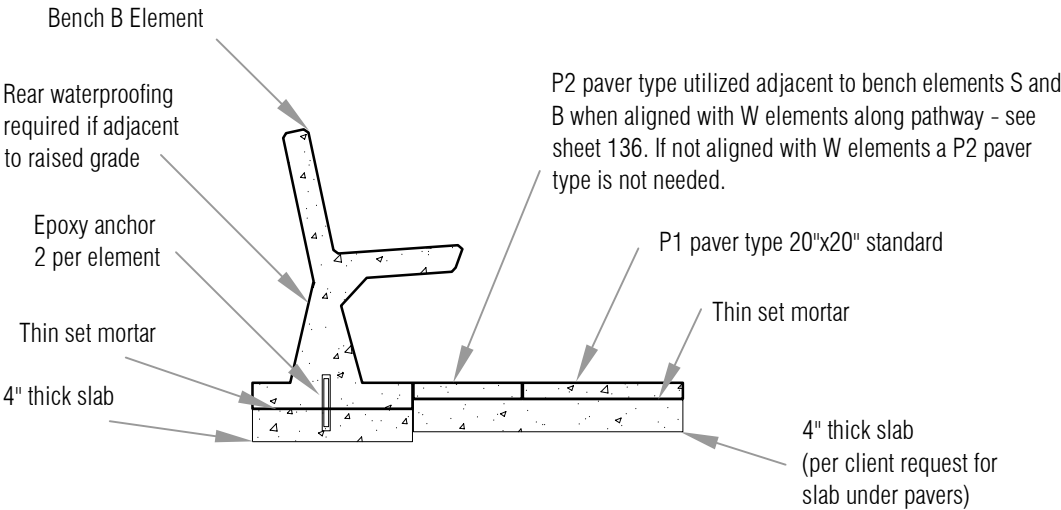
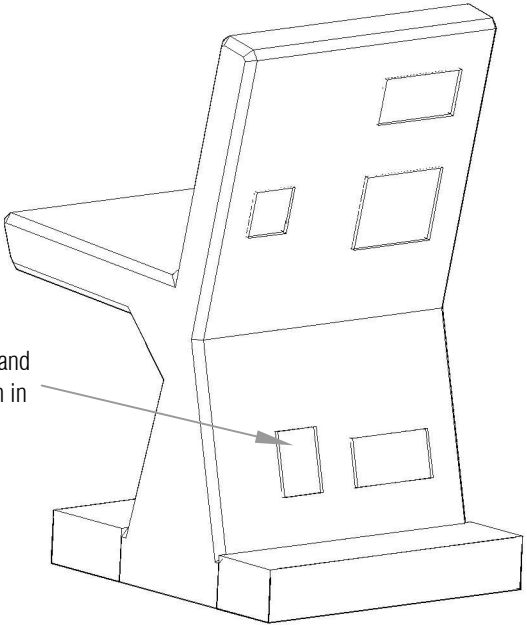
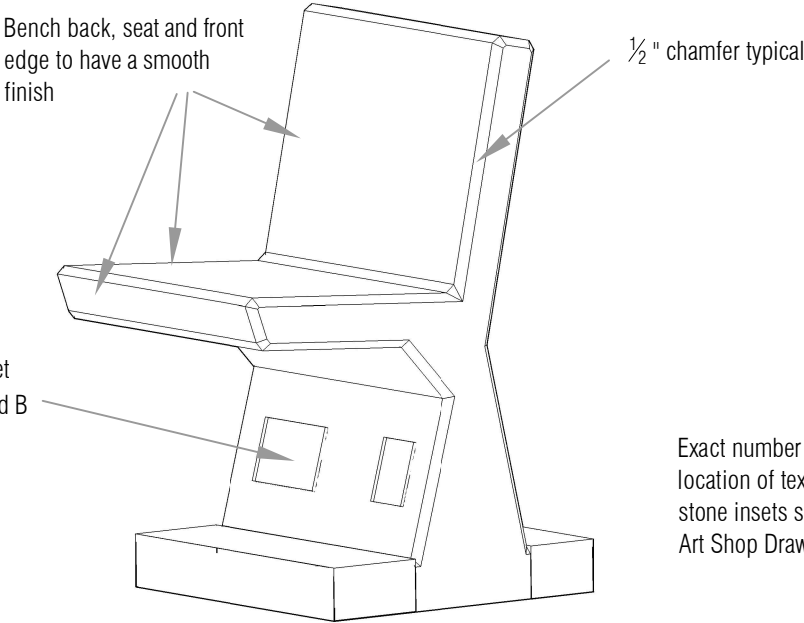
Bench B Element  
 Section A  $\frac{1}{2}" = 1'$   
 See engineering sheet 152 for additional details



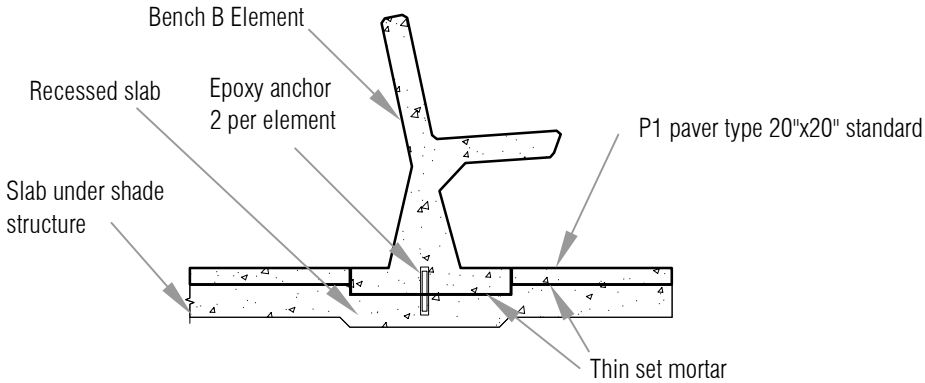
Bench B Element  
 Top View  $\frac{1}{2}" = 1'$   
 See engineering sheet 152 for additional details



Bench B Element  
 Side View  $\frac{1}{2}" = 1'$   
 See engineering sheet 152 for additional details



Bench B Element  
 Section near pathway - see sheet 136 for condition with raised grade  
 $\frac{1}{2}" = 1'$  See engineering sheet 152 for additional details



Bench B Element  
 Section on slab under shade structure, see sheets 129 and 131  
 $\frac{1}{2}" = 1'$  See engineering sheet 152 for additional details

Important Note:  
 As noted, all dimensions are nominal. Final Concrete Shop Drawings must indicate actual dimensions which shall be coordinated with final client, artist, engineer, and installer approved grout line widths.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074			

**TY LIN INTERNATIONAL**  
 engineers | planners | scientists  
 DES: MSI DR: MSI CK: MSI DATE: 9/16

**T.Y. LIN INTERNATIONAL**  
 CONSULTING ENGINEER  
 DATE: 9/16

**Michael Singer Inc.**  
 Studio North - Ph: 802-464-2165  
 P.O. Box 682, Wilmington, VT 05363  
 Studio South - Ph: 561-865-7683  
 321 NW 1st Ave, Delray Beach, FL 33444  
 www.michaelsinger.com

### Phoenix Grand Canal Integrated Art Bench Element B

Notes:

- All engineering details and requirements supersede Integrated Art Drawings. Concrete Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.
- All concrete to be cast with integral colors. Seat surfaces and front edge to have a consistent smooth finish free of fibers and surface inconsistencies. Concrete to be fiber reinforced with Nycon fibers or an approved equal. Mix design must be provided to Artist and EOR, with 7-day and 28-day strength test results, prior to casting. Color and finish samples must be provided to Artist and approved prior to casting.
- All rubber texture inserts to be provided by Artist for placement in concrete molds. Stone insets to be procured by concrete fabricator for placement (using detail D4 on sheet 153) in concrete molds. Locations of these details are indicated in engineering plans and elevations as maximum allowable areas for placement of insets. All color selection, texture, and stone placement locations and sizes will be indicated in Art Shop Drawings provided by Artist.
- All exposed concrete corners and edges to have a  $\frac{1}{2}"$  chamfer unless noted otherwise.
- All non-smooth surfaces to have an even acid etched finish. Finish samples must be provided to Artist and approved prior to casting.
- This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.

**Call at least two full working days before you begin excavation.**  
**ARIZONA 811**  
 Arizona Blue Stake, Inc.  
 Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
 In Maricopa County: (602) 263-1100

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**CITY OF PHOENIX, ARIZONA**  
 STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
**UPTOWN AND GATEWAY NORTH**

### INTEGRATED ART DRAWINGS

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	133	153

SCALE: N.T.S. or as noted

REVISION BY	CITY OF PHOENIX	NO.	DESCRIPTION	REV BY	CHK BY	DATE

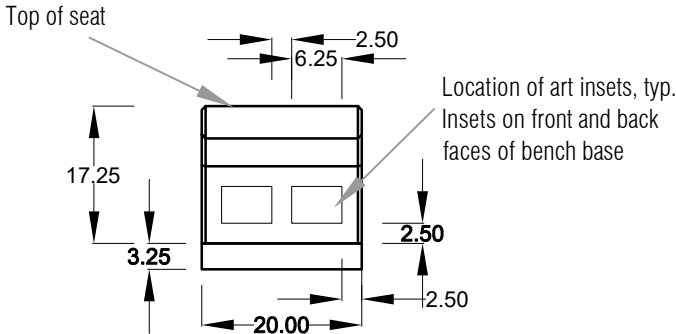
REVISION BY	CITY OF PHOENIX	NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY	CITY OF PHOENIX	NO.	DESCRIPTION	REV BY	CHK BY	DATE

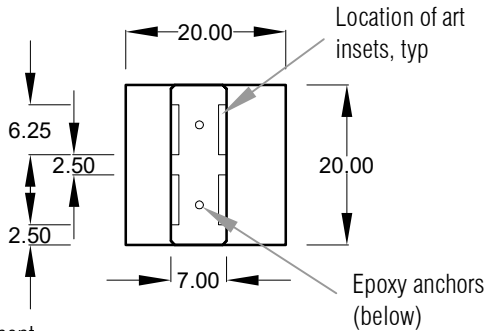
GRAND CANALSCAPE PHASE 1

UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

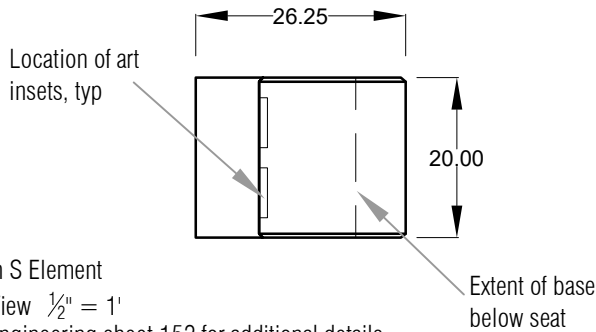
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



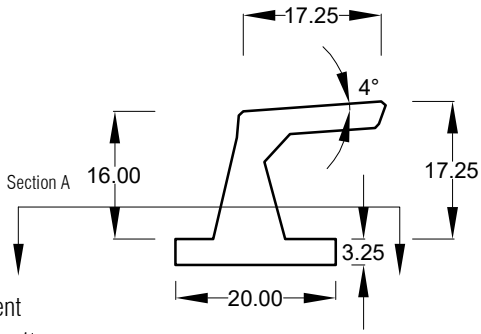
Bench S Element  
Elevation  $\frac{1}{2}" = 1'$   
See engineering sheet 152 for additional details



Bench S Element  
Section A  $\frac{1}{2}" = 1'$   
See engineering sheet 152 for additional details

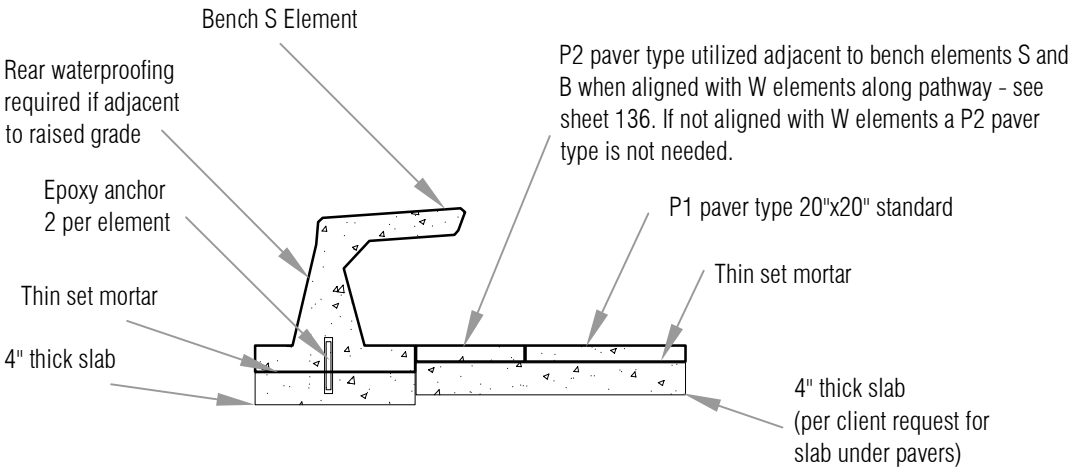
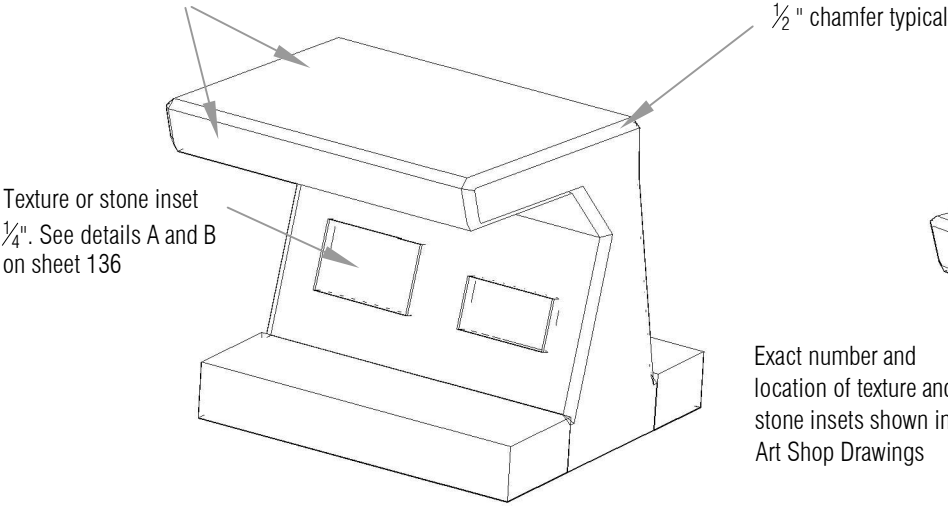


Bench S Element  
Top View  $\frac{1}{2}" = 1'$   
See engineering sheet 152 for additional details

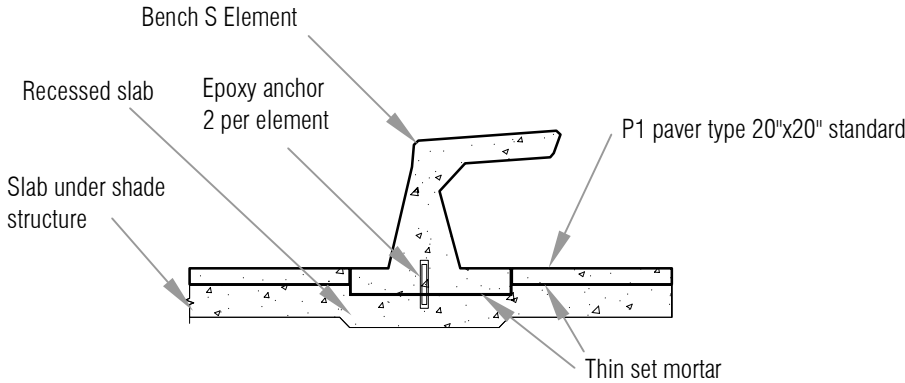


Bench S Element  
Side View  $\frac{1}{2}" = 1'$   
See engineering sheet 152 for additional details

Bench seat and front edge to have a smooth finish



Bench S Element  
Section near pathway - see sheet 136 for condition adjacent to raised grade  
 $\frac{1}{2}" = 1'$  See engineering sheet 152 for additional details



Bench S Element  
Section on slab under shade structure, see sheets 129 and 131  
 $\frac{1}{2}" = 1'$  See engineering sheet 152 for additional details


Important Note:  
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F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074			

**TY LIN INTERNATIONAL**  
engineers | planners | scientists

**T.Y. LIN INTERNATIONAL**  
CONSULTING ENGINEER

DES: MSI    DR: MSI    CK: MSI    DATE: 9/16



**Michael Singer Inc.**  
Studio North - Ph: 802-464-2165  
POBox 682, Wilmington, VT 05363  
Studio South - Ph: 561-865-7683  
321 NW 1st Ave, Delray Beach, FL 33444  
www.michaelsinger.com

### Phoenix Grand Canal Integrated Art Bench Element S

Notes:

- All engineering details and requirements supersede Integrated Art Drawings. Concrete Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.
- All concrete to be cast with integral colors. Seat surfaces and front edge to have a consistent smooth finish free of fibers and surface inconsistencies. Concrete to be fiber reinforced with Nycon fibers or an approved equal. Mix design must be provided to Artist and EOR, with 7-day and 28-day strength test results, prior to casting. Color and finish samples must be provided to Artist and approved prior to casting.
- All rubber texture inserts to be provided by Artist for placement in concrete molds. Stone insets to be procured by concrete fabricator for placement (using detail D4 on sheet 153) in concrete molds. Locations of these details are indicated in engineering plans and elevations as maximum allowable areas for placement of insets. All color selection, texture, and stone placement locations and sizes will be indicated in Art Shop Drawings provided by Artist.
- All exposed concrete corners and edges to have a  $\frac{1}{2}"$  chamfer unless noted otherwise.
- All non-smooth surfaces to have an even acid etched finish. Finish samples must be provided to Artist and approved prior to casting.
- This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.

Call at least two full working days before you begin excavation.

**ARIZONA 811**  
Arizona Blue Stake, Inc.

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In Maricopa County: (602) 263-1100

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
**UPTOWN AND GATEWAY NORTH**

**INTEGRATED ART DRAWINGS**

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	134	153

SCALE: N.T.S. or as noted

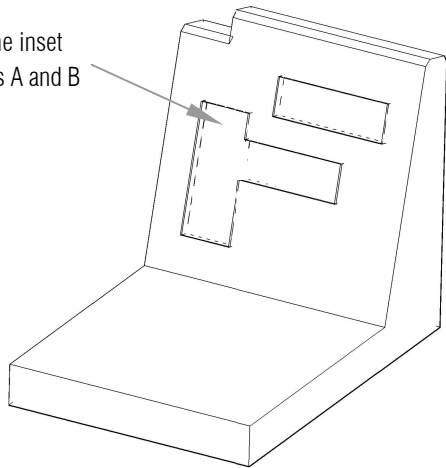
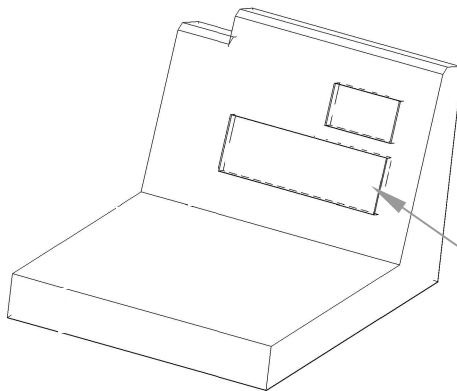
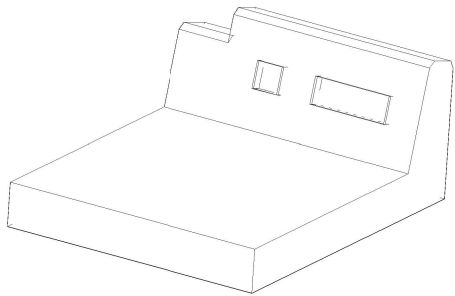


REVISION BY	CITY OF PHOENIX	NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY	CITY OF PHOENIX	NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY	CITY OF PHOENIX	NO.	DESCRIPTION	REV BY	CHK BY	DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

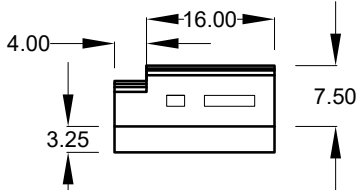


Texture or stone inset  
 $\frac{1}{4}$ ". See details A and B  
on sheet 136

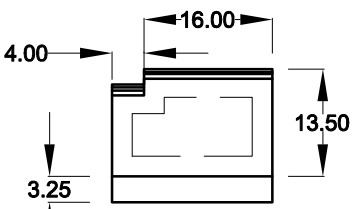
Exact number and  
location of texture and  
stone insets shown in  
Art Shop Drawings

Location of art insets, typ. . W2 and W3  
elements have more flexibility for insets  
due to rebar at the rear of the element-  
see engineering drawing sheet 153.

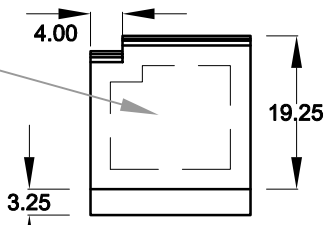
Important Note:  
As noted, all dimensions are  
nominal. Final Concrete Shop  
Drawings must indicate actual  
dimensions which shall be  
coordinated with final client,  
artist, engineer, and installer  
approved grout line widths.



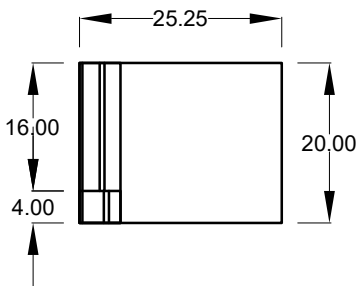
W1 Wall Element  
Front Elevation  $\frac{1}{2}$ " = 1'



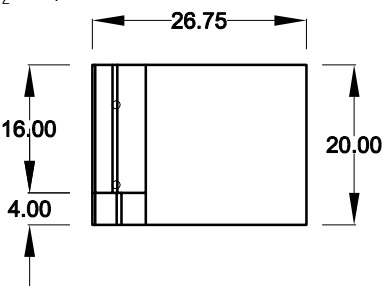
W2 Wall Element  
Front Elevation  $\frac{1}{2}$ " = 1'



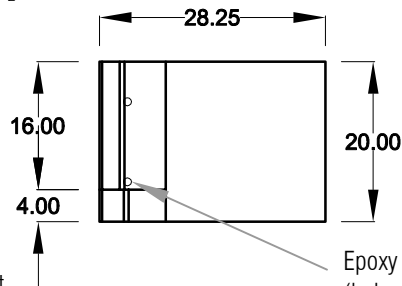
W3 Wall Element  
Front Elevation  $\frac{1}{2}$ " = 1'



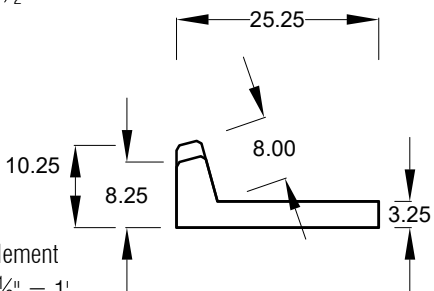
W1 Wall Element  
Top View  $\frac{1}{2}$ " = 1'



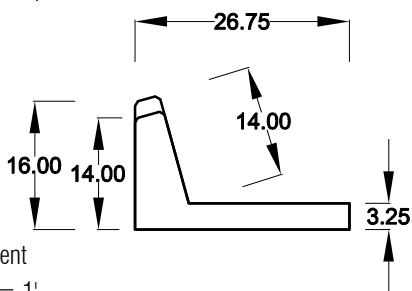
W2 Wall Element  
Top View  $\frac{1}{2}$ " = 1'



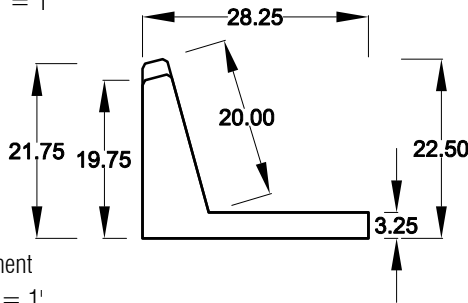
W3 Wall Element  
Top View  $\frac{1}{2}$ " = 1'



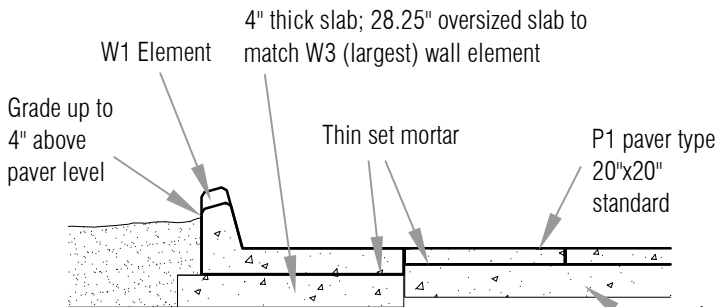
W1 Wall Element  
Side View  $\frac{1}{2}$ " = 1'



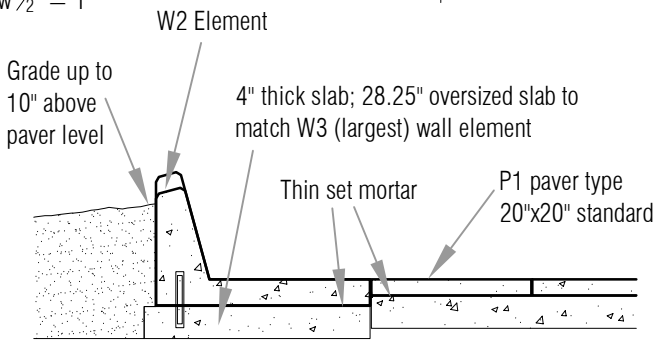
W2 Wall Element  
Side View  $\frac{1}{2}$ " = 1'



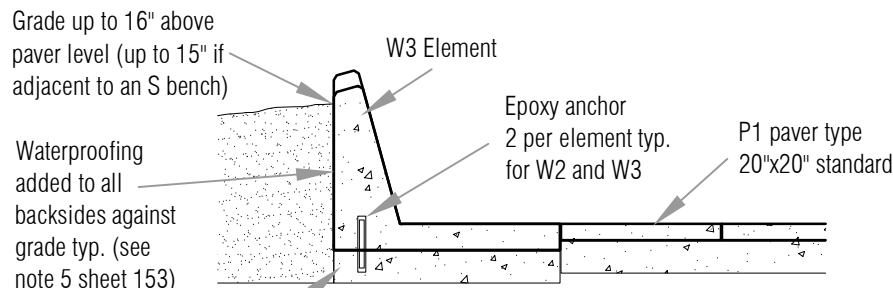
W3 Wall Element  
Side View  $\frac{1}{2}$ " = 1'



W1 Element Section near pathway  
 $\frac{1}{2}$ " = 1' See engineering details on sheet 153



W2 Element Section near pathway  
 $\frac{1}{2}$ " = 1' See engineering details on sheet 153



W3 Element Section near pathway  
 $\frac{1}{2}$ " = 1' See engineering details on sheet 153

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074			

**TY LIN INTERNATIONAL**  
engineers | planners | scientists  
DES: MSI DR: MSI CK: MSI DATE: 9/16

**TY LIN INTERNATIONAL**  
CONSULTING ENGINEER  
T.Y. LIN  
Michael Singer Inc.  
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Studio South - Ph: 561-865-7683  
321 NW 1st Ave, Delray Beach, FL 33444  
www.michaelsinger.com

Phoenix Grand Canal Integrated Art  
W Wall Elements

Notes:

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3. All rubber texture inserts to be provided by Artist for placement in concrete molds. Stone insets to be procured by concrete fabricator for placement (using detail D4 on sheet 153) in concrete molds. Locations of these details are indicated in engineering plans and elevations as maximum allowable areas for placement of insets. All color selection, texture, and stone placement locations and sizes will be indicated in Art Shop Drawings provided by Artist.
4. All exposed concrete corners and edges to have a  $\frac{1}{2}$ " chamfer unless noted otherwise.
5. All non-smooth surfaces to have an even acid etched finish. Finish samples must be provided to Artist and approved prior to casting.
6. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
UPTOWN AND GATEWAY NORTH

**INTEGRATED ART DRAWINGS**

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	135	153

SCALE: N.T.S. or as noted

ST87600074, DECEMBER, 2015

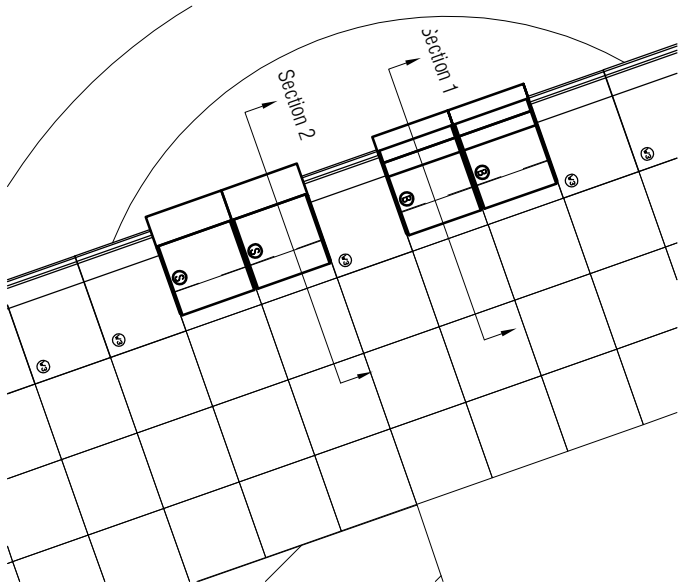


REVISION BY	DESCRIPTION	NO.	REV BY	CHK BY	DATE

REVISION BY	DESCRIPTION	NO.	REV BY	CHK BY	DATE

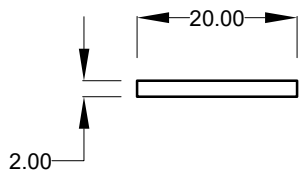
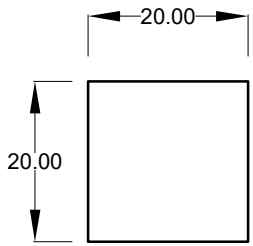
REVISION BY	DESCRIPTION	NO.	REV BY	CHK BY	DATE

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

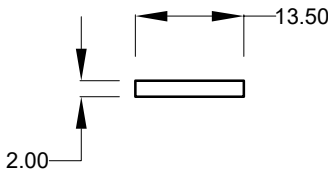
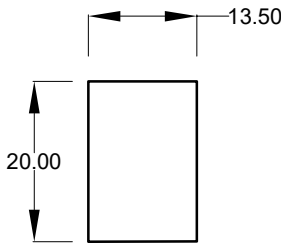


Plan detail of Integrated Art Elements  
(Station 22 shown as typical condition)  
1/4" = 1' See sheet 135 for sections through W Elements

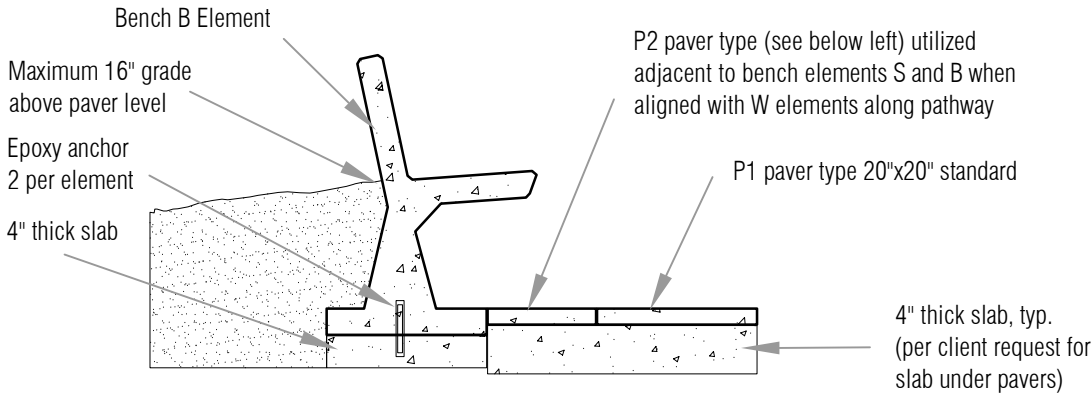
Important Note:  
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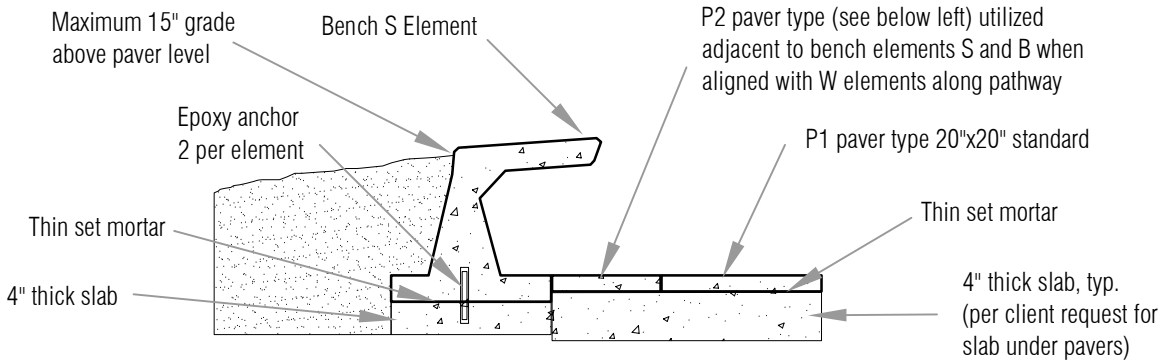
Standard P1 Sculpted Paver  
Surface texture depth not to exceed 1/4"  
1/2" = 1' Nominal dimensions shown



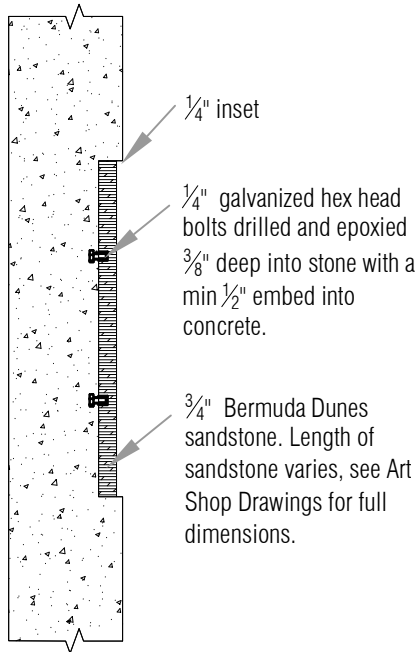
P2 Sculpted Paver -  
Utilized only at S and B elements associated  
with W elements, see sections 1 and 2 above  
Surface texture depth not to exceed 1/4"  
1/2" = 1' Nominal dimensions shown



Section 1 - Bench B Element at raised grade associated with W Elements  
1/2" = 1' See engineering details for final details  
Note: Bench elements placed against grade change are fabricated without insets on rear faces;  
See note 5 on engineering sheet 152 regarding backside waterproofing

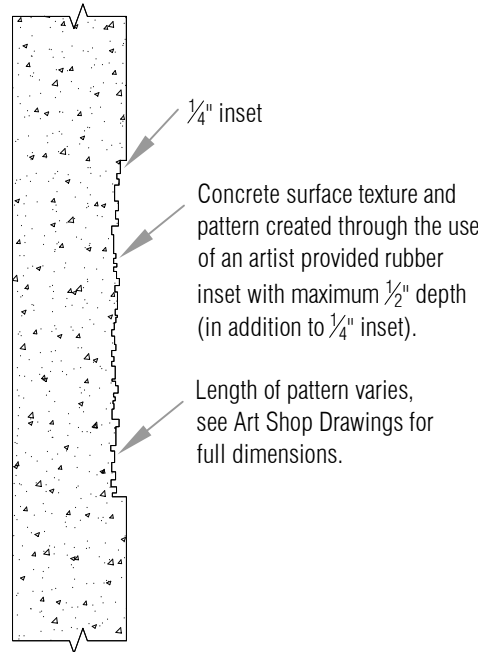


Section 2 - Bench S Element at raised grade associated with W Elements  
1/2" = 1' See engineering details for final details  
Note: Bench elements placed against grade change are fabricated without insets on rear faces;  
See note 5 on engineering sheet 152 regarding backside waterproofing



Detail A  
Sandstone Embed

Art Embed / Inset Details  
1 1/2" = 1' Final details must be approved by Engineer of Record



Detail B  
Texture / Pattern Inset

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9	ARIZ.	ST87600074			

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Studio South - Ph: 561-865-7683  
321 NW 1st Ave, Delray Beach, FL 33444  
www.michaelsinger.com

**Michael Singer Studio**

### Phoenix Grand Canal Integrated Art Integrated Art Element Details

Notes:

- All engineering details and requirements supersede Integrated Art Drawings. Concrete Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.
- All concrete to be cast with integral colors with an even acid wash finish (S and B elements also have smooth surfaces, see sheets 133 and 134). Concrete to be fiber reinforced with Nycon fibers or an approved equal. Mix design must be provided to Artist and EOR, with 7-day and 28-day strength test results, prior to casting. Color and finish samples must be provided to Artist and approved prior to casting.
- All rubber texture inserts to be provided by Artist for placement in concrete molds. Stone insets to be procured by concrete fabricator for placement (using detail D4 on sheet 153) in concrete molds. All color selection, texture, and stone placement locations and sizes will be indicated in Art Shop Drawings provided by Artist.
- All exposed concrete corners and edges to have a 1/2" chamfer unless noted otherwise.
- Ground surface textures (top of paver) shall never have a change of level exceeding 1/4" per ADA 303.2.
- This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.

Call at least two full working days before you begin excavation.

**ARIZONA 811**

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In Maricopa County: (602) 263-1100

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
UPTOWN AND GATEWAY NORTH

**INTEGRATED ART DRAWINGS**

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	136	153

SCALE: N.T.S. or as noted

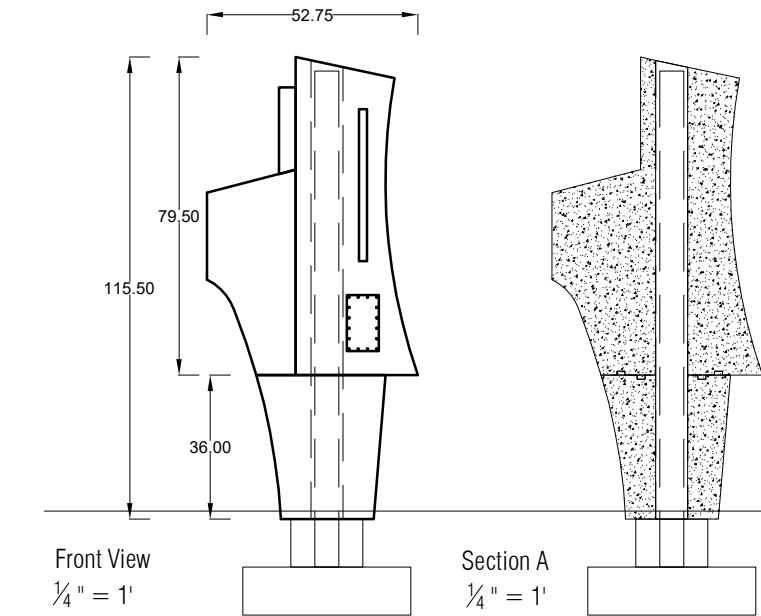
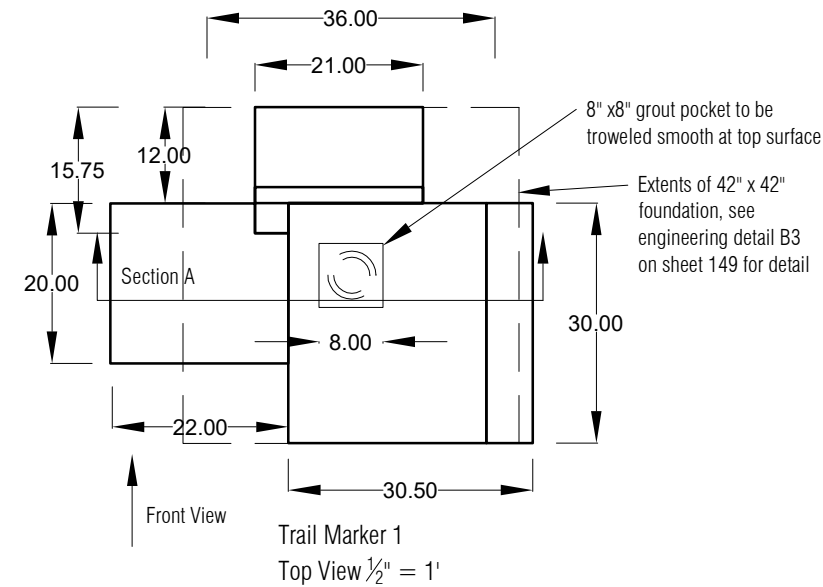
ST87600074, DECEMBER, 2015

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NO.	DESCRIPTION		REV BY	CHK BY	DATE	

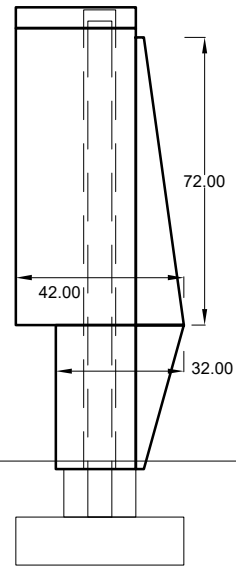
REVISION BY CITY OF PHOENIX						
NO.	DESCRIPTION		REV BY	CHK BY	DATE	

REVISION BY CITY OF PHOENIX						
NO.		DESCRIPTION		REV BY	CHK BY	DATE

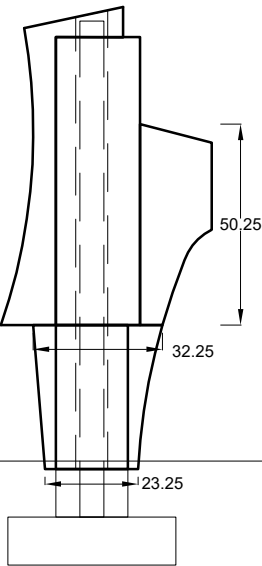
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



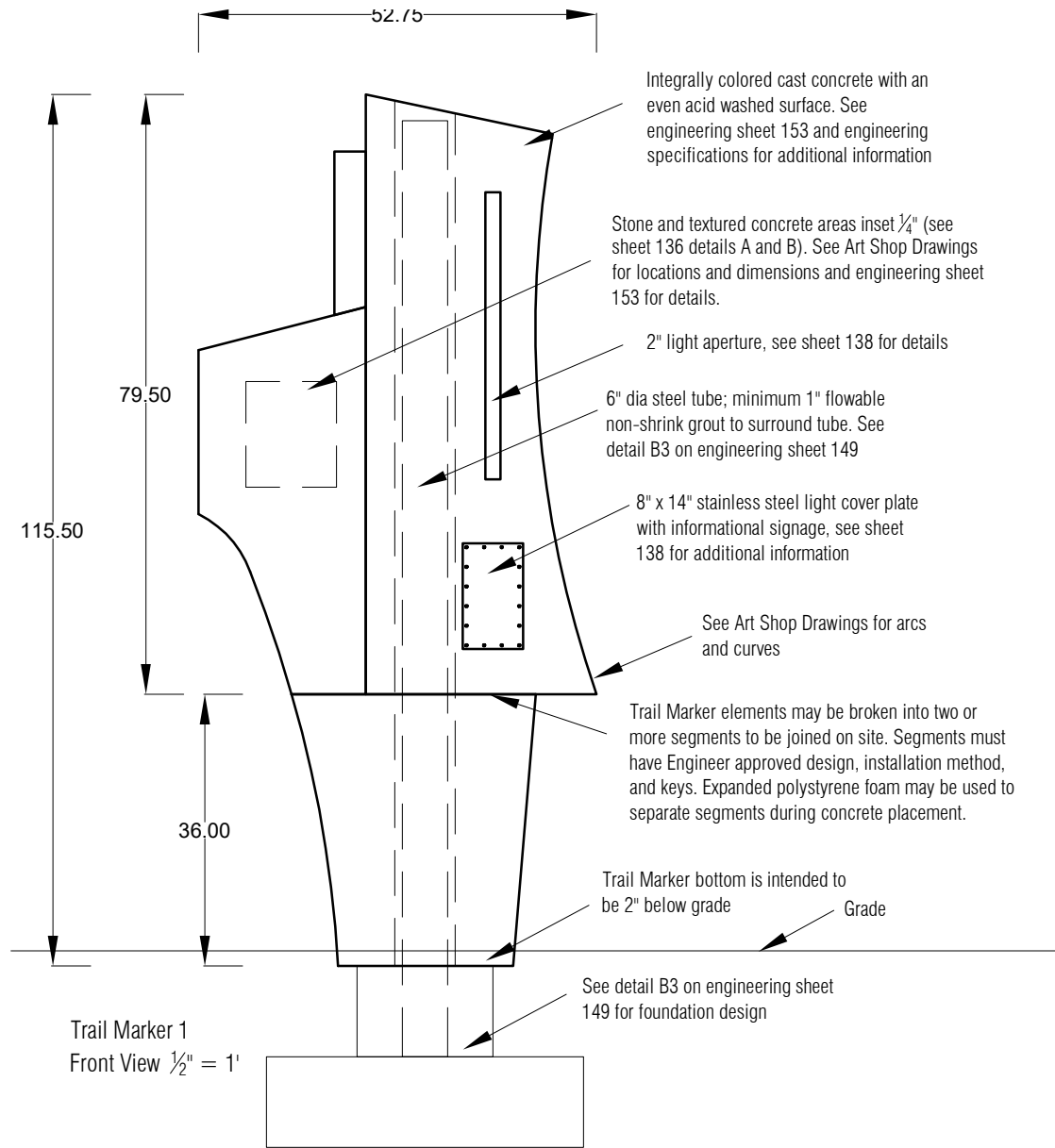
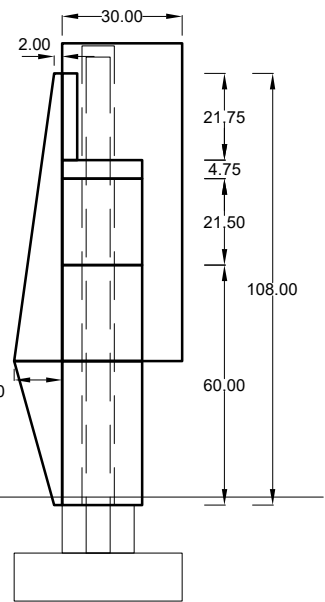
Right Side  
1/4" = 1'



Rear View  
1/4" = 1'



Left Side  
1/4" = 1'



Integrally colored cast concrete with an even acid washed surface. See engineering sheet 153 and engineering specifications for additional information

Stone and textured concrete areas inset 1/4" (see sheet 136 details A and B). See Art Shop Drawings for locations and dimensions and engineering sheet 153 for details.

2" light aperture, see sheet 138 for details

6" dia steel tube; minimum 1" flowable non-shrink grout to surround tube. See detail B3 on engineering sheet 149

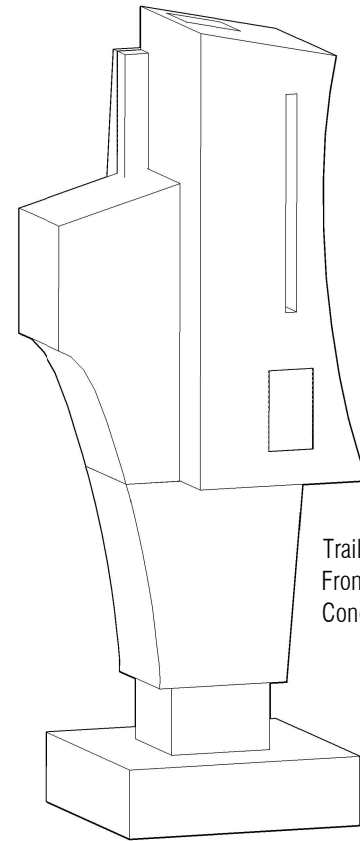
8" x 14" stainless steel light cover plate with informational signage, see sheet 138 for additional information

See Art Shop Drawings for arcs and curves

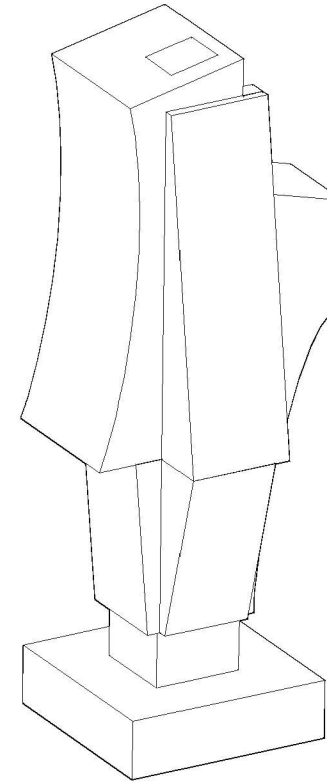
Trail Marker elements may be broken into two or more segments to be joined on site. Segments must have Engineer approved design, installation method, and keys. Expanded polystyrene foam may be used to separate segments during concrete placement.

Trail Marker bottom is intended to be 2" below grade

See detail B3 on engineering sheet 149 for foundation design



Trail Marker 1  
Front and Left  
Coner Shown



Trail Marker 1  
Right and Rear  
Coner Shown

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### Phoenix Grand Canal Integrated Art Trail Marker 1 (TM1)

Notes:

- All engineering details and requirements supersede Integrated Art Drawings. Concrete Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.
- All Trail Marker concrete to be cast with integral colors with an even acid wash finish. Concrete to be fiber reinforced with Nycon fibers or an approved equal. Mix design must be provided to Artist and EOR, with 7-day and 28-day strength test results, prior to casting. Color and finish samples must be provided to Artist and approved prior to casting.
- All rubber texture inserts to be provided by Artist for placement in concrete molds. Stone insets to be procured by concrete fabricator for placement (using detail D4 on sheet 153) in concrete molds. Stainless steel frame and cover plate to be procured by concrete fabricator for placement (using detail D5 on sheet 153) in concrete molds. All color selection, texture, and stone placement locations and sizes will be indicated in Art Shop Drawings provided by Artist. Text (including font size and layout) for the stainless steel cover plate etching will be provided by Artist.
- All exposed concrete corners and edges to have a 1/2" chamfer unless noted otherwise.
- See Integrated Art Drawings sheets 127 and 128 for Trail Marker locations.
- This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.

**Call at least two full working days before you begin excavation.**  
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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
UPTOWN AND GATEWAY NORTH

**INTEGRATED ART DRAWINGS**

DR: MSI	DES: MSI	CK: MSI	SHEET NO.	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	137	153

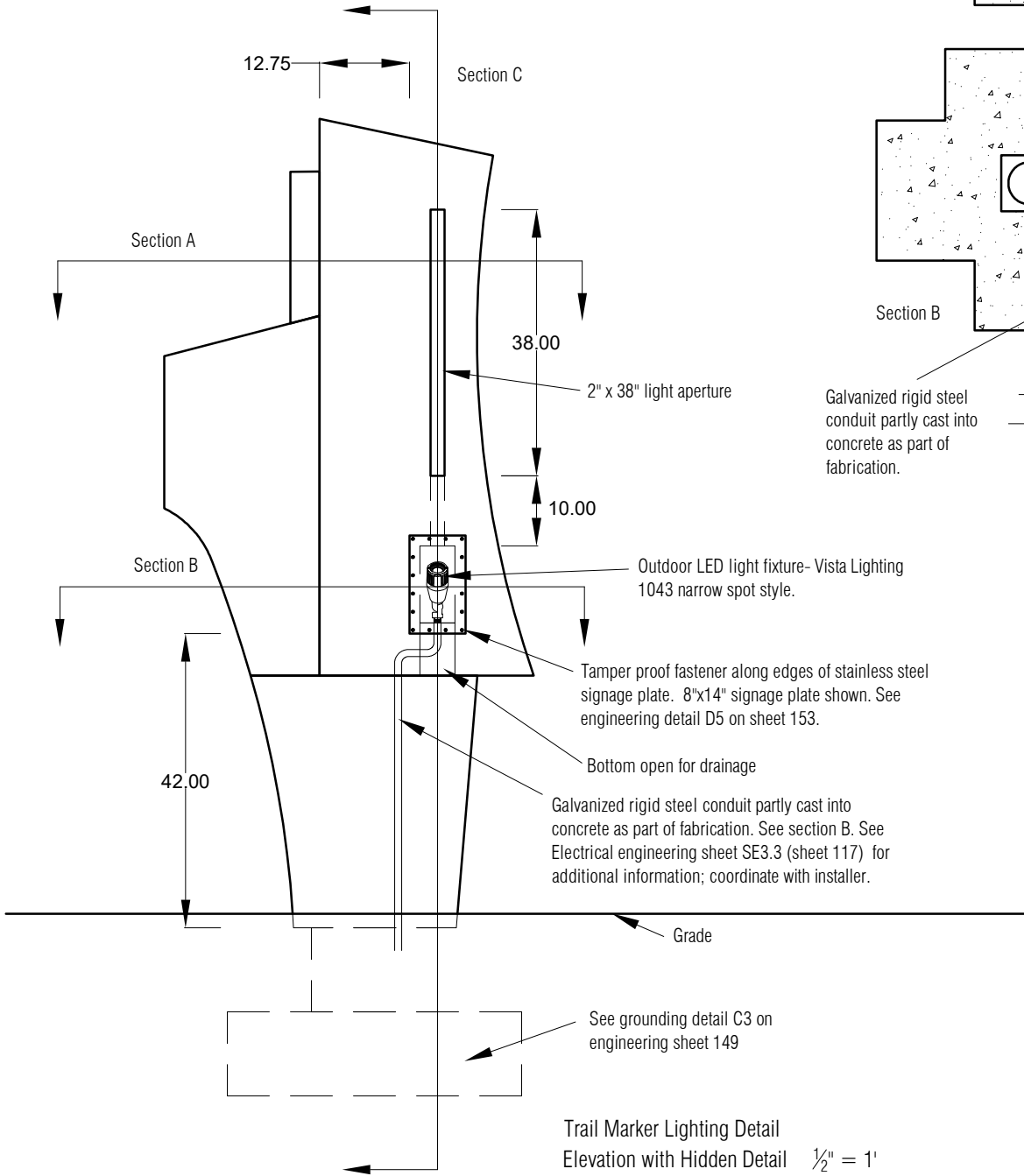
SCALE: N.T.S. or as noted

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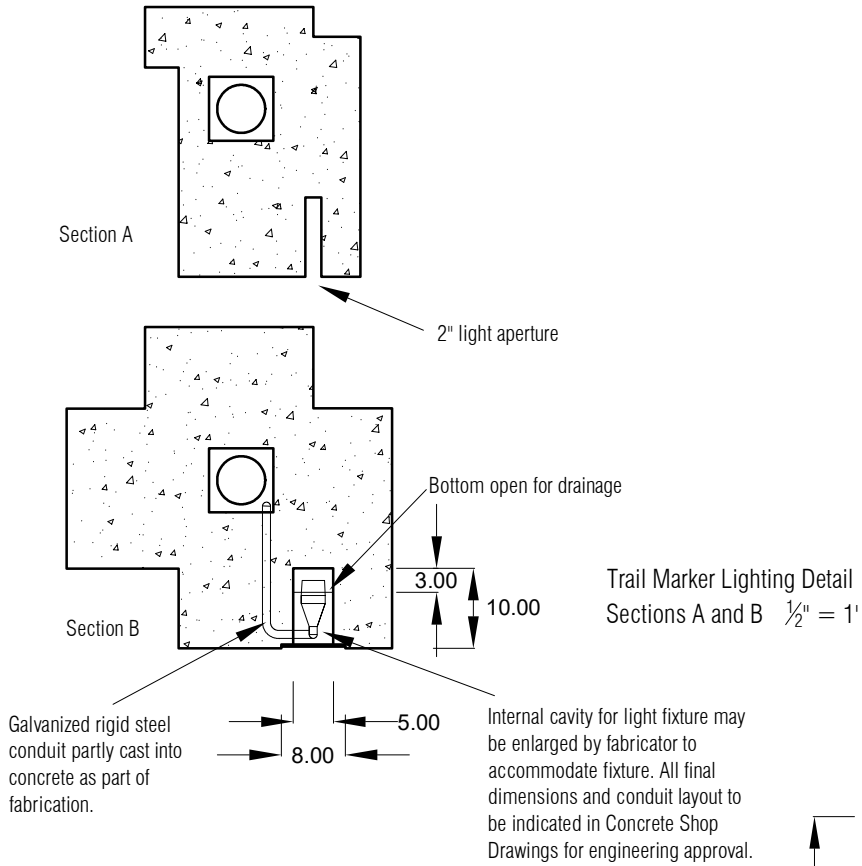
REVISION BY CITY OF PHOENIX		DESCRIPTION	REV BY	CHK BY	DATE
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GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

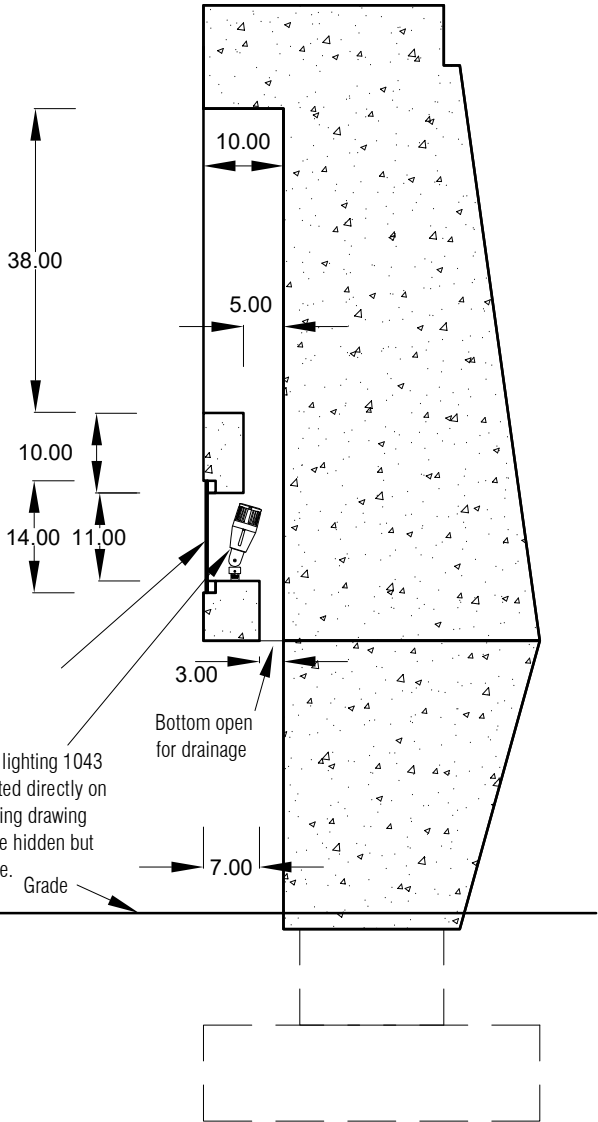


Vista Lighting 1043 fixture:  
1043-P-NS-30-D-MV-ND  
LED 600-750 lumens, narrow spot, 3000K light temp  
Model 3107 could be used if low-voltage is required  
See electrical engineering drawings SE3.3 (sheet 117)  
for further information.

See electrical engineering details on SE3.3 (sheet 117)  
and all electrical engineering specifications. Concrete  
Shop Drawings must be reviewed and approved by both  
structural and electrical Engineers of Record prior to  
fabrication.




Trail Marker Lighting Detail  
Section C 1/2" = 1'



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### Phoenix Grand Canal Integrated Art Lighting Detail for Trail Marker 1 (TM1)

Notes:

- All engineering details and requirements supersede Integrated Art Drawings. Concrete Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.
- All Trail Marker concrete to be cast with integral colors with an even acid wash finish. Concrete to be fiber reinforced with Nycon fibers or an approved equal. Mix design must be provided to Artist and EOR, with 7-day and 28-day strength test results, prior to casting. Color and finish samples must be provided to Artist and approved prior to casting.
- Stainless steel frame and cover plate to be procured by concrete fabricator for placement (using detail D5 on sheet 153) in concrete molds. Text (including font size and layout) for the stainless steel cover plate etching will be provided by Artist.
- All exposed concrete corners and edges to have a 1/2" chamfer unless noted otherwise.
- Conduit to be provided and installed by concrete fabricator. Conduit layout must be shown in Concrete Fabrication Shop Drawings for EOR approval and Artist review. All conduit layout and openings for light fixtures must be coordinated with electrical contractor and concrete installer prior to fabrication to ensure functionality and accessibility for both installation and future maintenance.
- This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
**UPTOWN AND GATEWAY NORTH**

**INTEGRATED ART DRAWINGS**

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16		

SCALE: N.T.S. or as noted

138 153

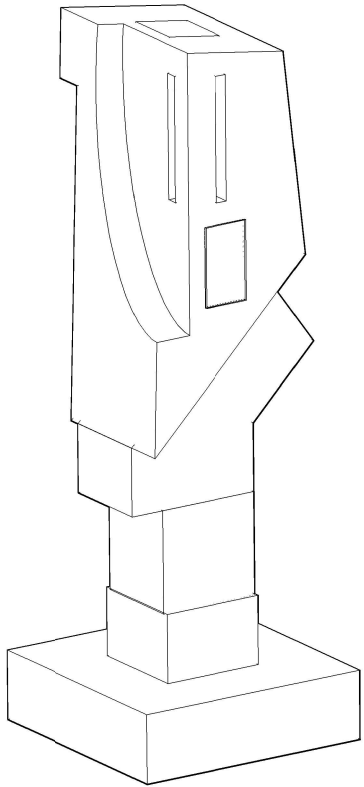
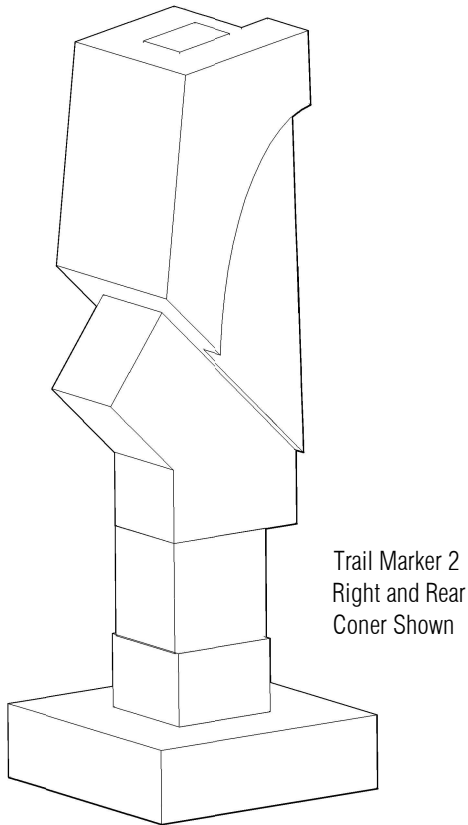
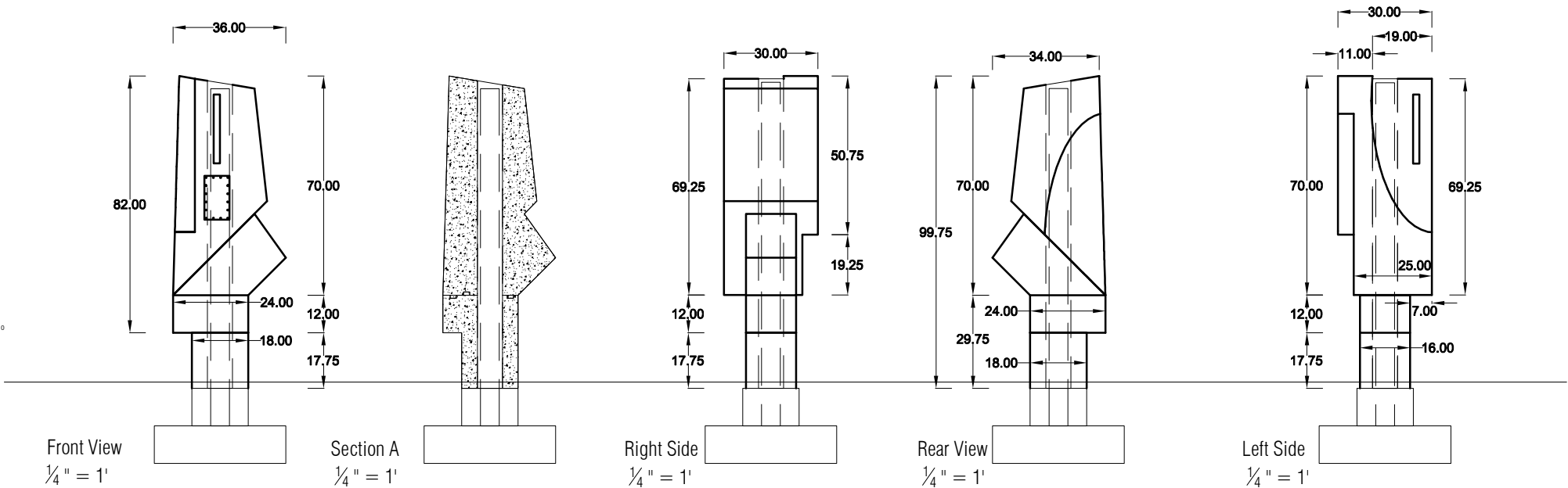
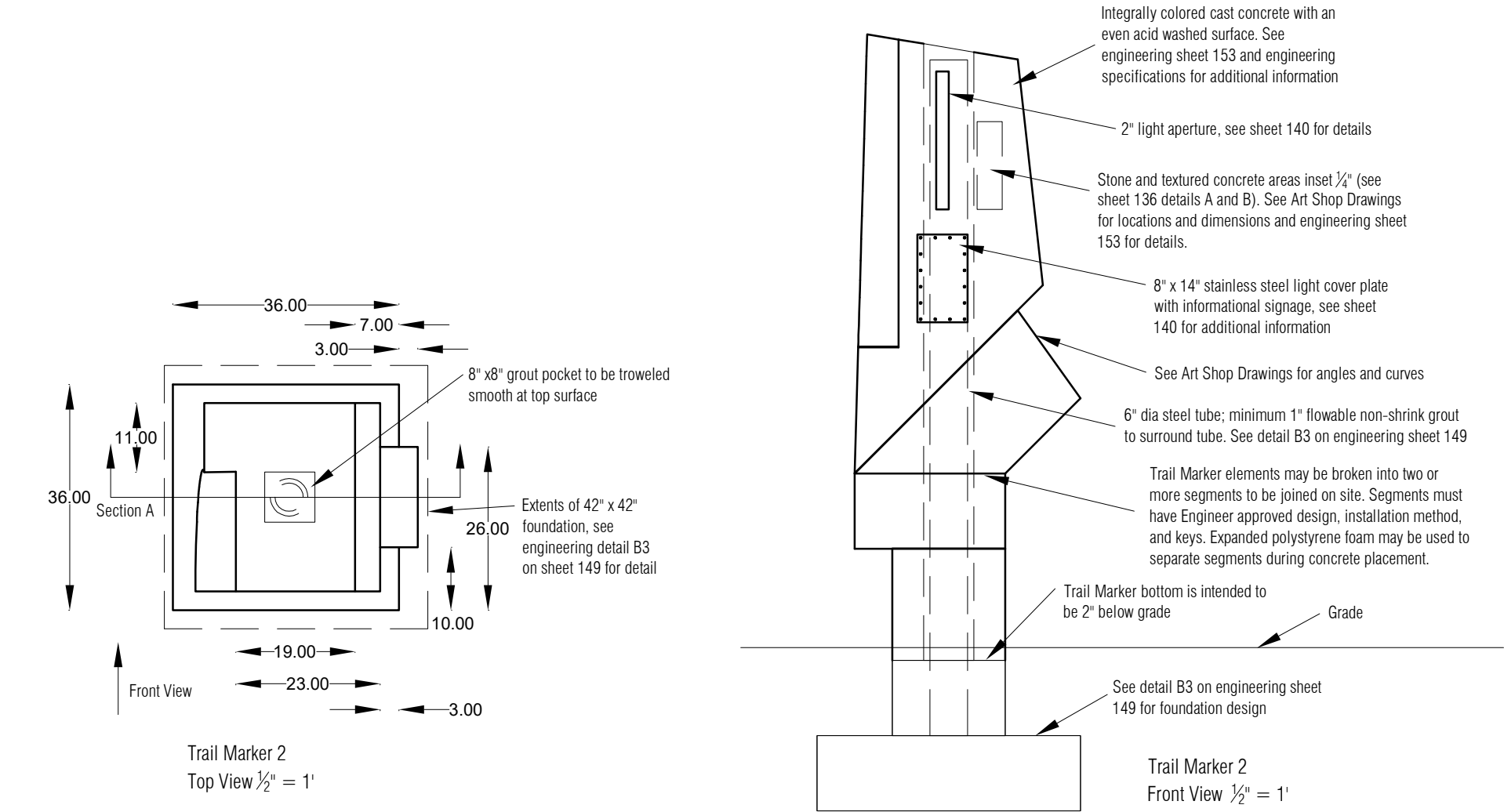
ST87600074, DECEMBER, 2015

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NO.					

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



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DES: MSI	DR: MSI	CK: MSI	DATE: 9/16		



## Phoenix Grand Canal Integrated Art Trail Marker 2 (TM2)

- Notes:
- All engineering details and requirements supersede Integrated Art Drawings. Concrete Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.
  - All Trail Marker concrete to be cast with integral colors with an even acid wash finish. Concrete to be fiber reinforced with Nycon fibers or an approved equal. Mix design must be provided to Artist and EOR, with 7-day and 28-day strength test results, prior to casting. Color and finish samples must be provided to Artist and approved prior to casting.
  - All rubber texture inserts to be provided by Artist for placement in concrete molds. Stone insets to be procured by concrete fabricator for placement (using detail D4 on sheet 153) in concrete molds. Stainless steel frame and cover plate to be procured by concrete fabricator for placement (using detail D5 on sheet 153) in concrete molds. All color selection, texture, and stone placement locations and sizes will be indicated in Art Shop Drawings provided by Artist. Text (including font size and layout) for the stainless steel cover plate etching will be provided by Artist.
  - All exposed concrete corners and edges to have a 1/2" chamfer unless noted otherwise.
  - See Integrated Art Drawings sheets 127 and 128 for Trail Marker locations.
  - This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.



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GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	139	153
SCALE: N.T.S. or as noted				

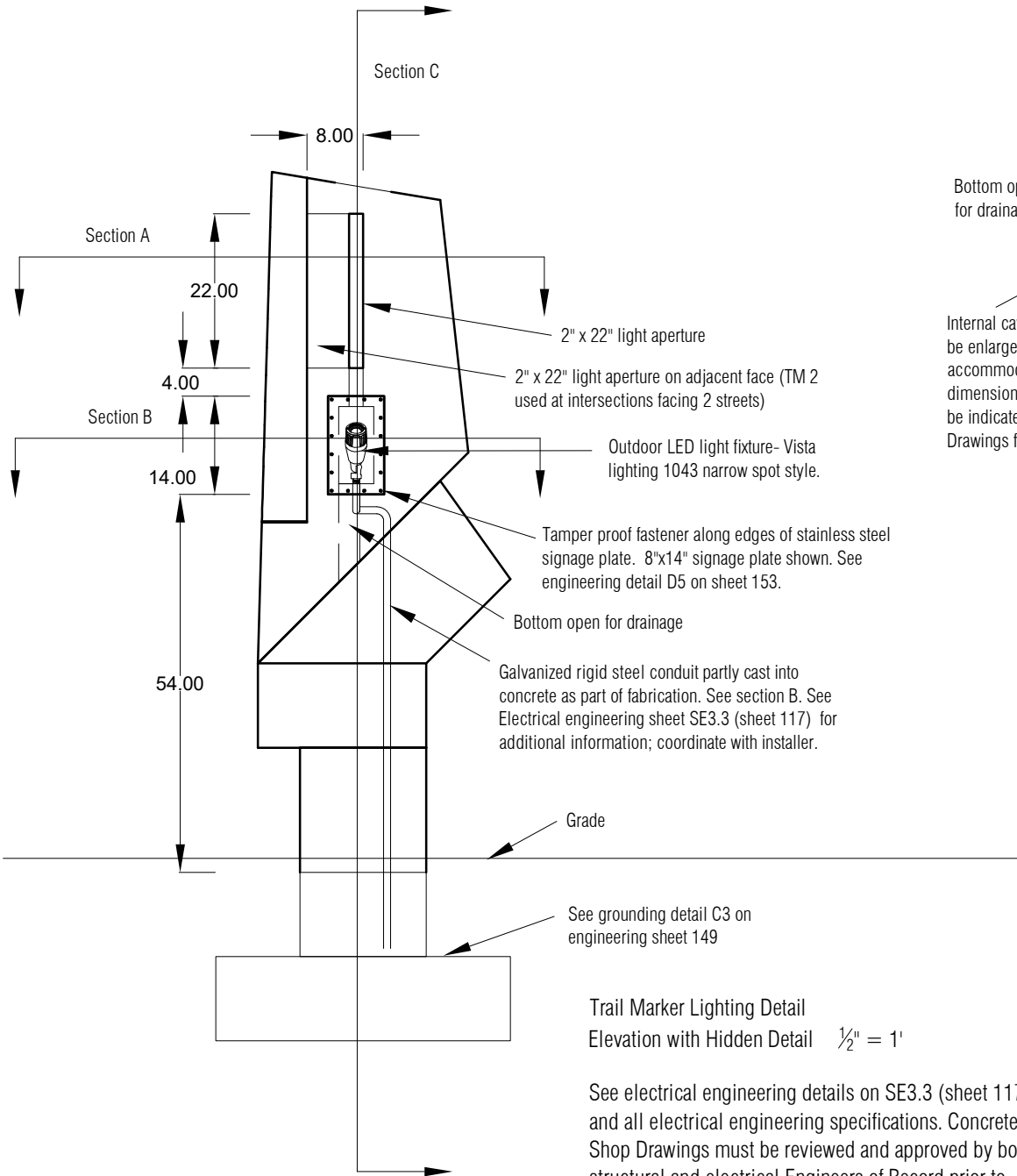
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REVISION BY CITY OF PHOENIX	DESCRIPTION	REV BY	CHK BY	DATE
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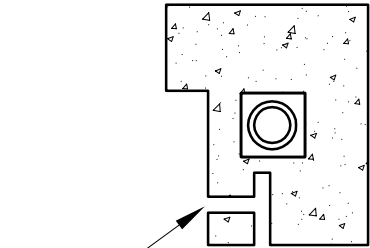
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



Vista Lighting 1043 fixture:  
1043-P-NS-30-D-MV-ND  
LED 600-750 lumens, narrow spot, 3000K light temp  
Model 3107 could be used if low-voltage is required  
See electrical engineering drawings SE3.3 (sheet 117)  
for further information.

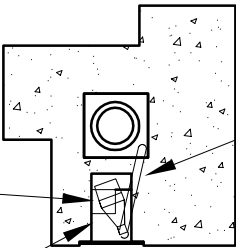
Trail Marker Lighting Detail  
Elevation with Hidden Detail 1/2" = 1'

See electrical engineering details on SE3.3 (sheet 117)  
and all electrical engineering specifications. Concrete  
Shop Drawings must be reviewed and approved by both  
structural and electrical Engineers of Record prior to  
fabrication.



Section A

2" light apertures  
in 2 directions



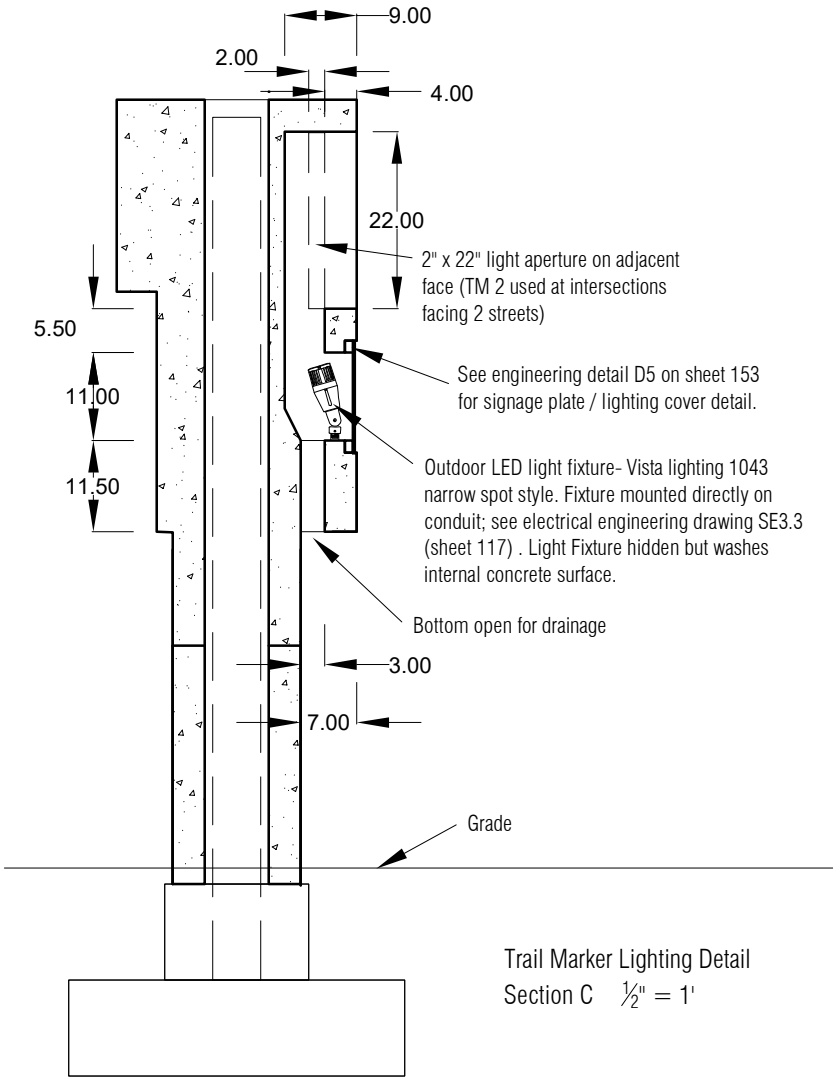
Section B

Galvanized rigid steel  
conduit partly cast into  
concrete as part of  
fabrication.

Bottom open  
for drainage

Internal cavity for light fixture may  
be enlarged by fabricator to  
accommodate fixture. All final  
dimensions and conduit layout to  
be indicated in Concrete Shop  
Drawings for engineering approval.

Trail Marker Lighting Detail  
Sections A and B 1/2" = 1'



Trail Marker Lighting Detail  
Section C 1/2" = 1'

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DES: MSI	DR: MSI	CK: MSI	DATE: 9/16		



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### Phoenix Grand Canal Integrated Art Lighting Detail for Trail Marker 2 (TM2)

Notes:  
1. All engineering details and requirements supersede  
Integrated Art Drawings. Concrete Fabrication Shop  
Drawings must be approved by the Artist and approved and  
signed by the Engineer of Record (EOR) prior to fabrication.

2. All Trail Marker concrete to be cast with integral colors  
with an even acid wash finish. Concrete to be fiber  
reinforced with Nycon fibers or an approved equal. Mix  
design must be provided to Artist and EOR, with 7-day and  
28-day strength test results, prior to casting. Color and  
finish samples must be provided to Artist and approved prior  
to casting.

3. Stainless steel frame and cover plate to be procured by  
concrete fabricator for placement (using detail D5 on sheet  
153) in concrete molds. Text (including font size and layout)  
for the stainless steel cover plate etching will be provided by  
Artist.

4. All exposed concrete corners and edges to have a  
1/2" chamfer unless noted otherwise.

5. Conduit to be provided and installed by concrete  
fabricator. Conduit layout must be shown in Concrete  
Fabrication Shop Drawings for EOR approval and Artist  
review. All conduit layout and openings for light fixtures  
must be coordinated with electrical contractor and concrete  
installer prior to fabrication to ensure functionality and  
accessibility for both installation and future maintenance.

6. This sheet is intended to be reviewed at 11"x17" sheet  
size. Double scale if printing at 200% onto a 22"x34". All  
dimensions are nominal.



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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	140	153
SCALE: N.T.S. or as noted				

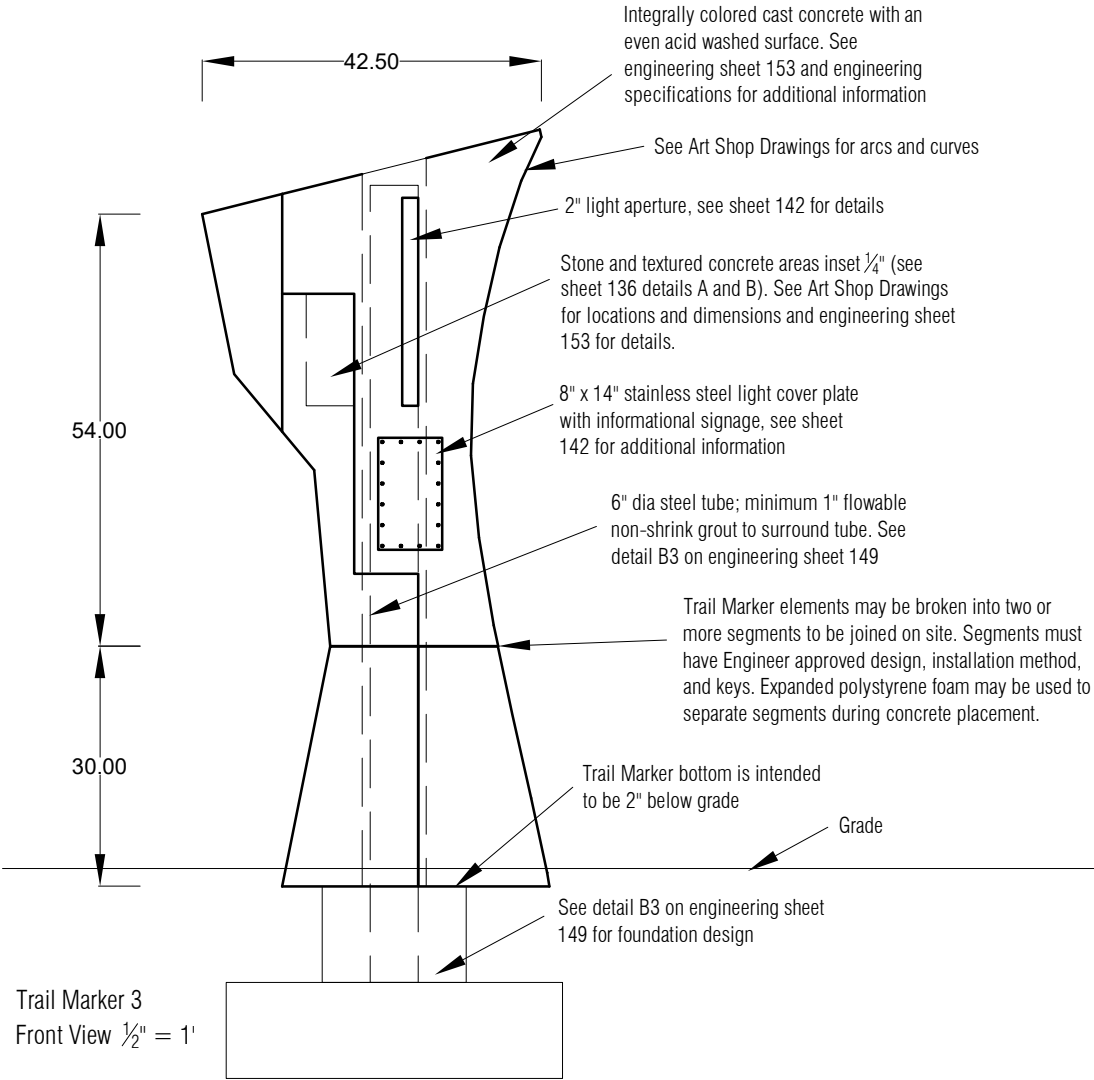
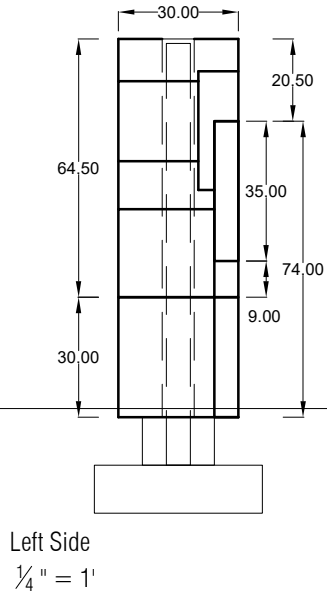
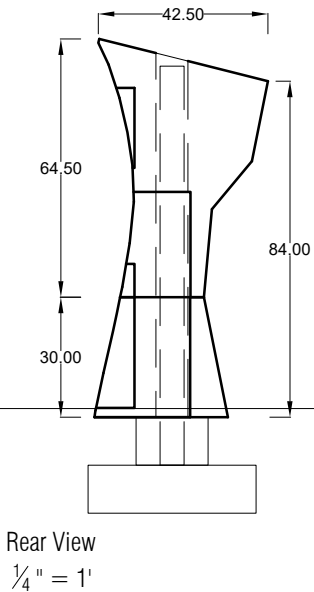
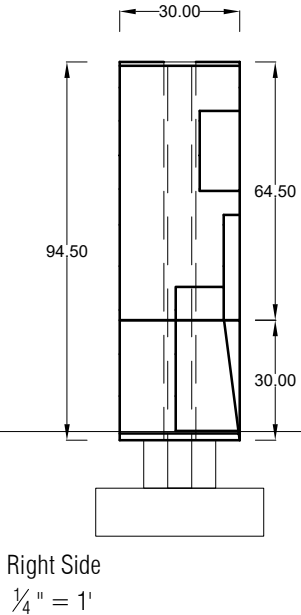
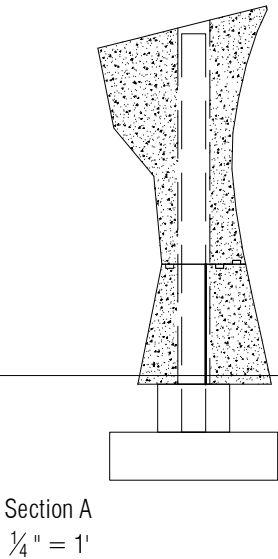
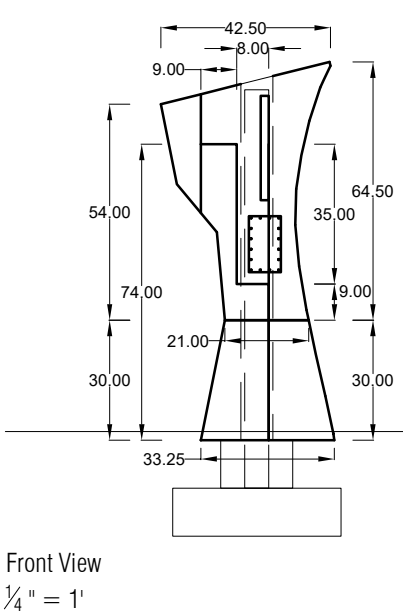
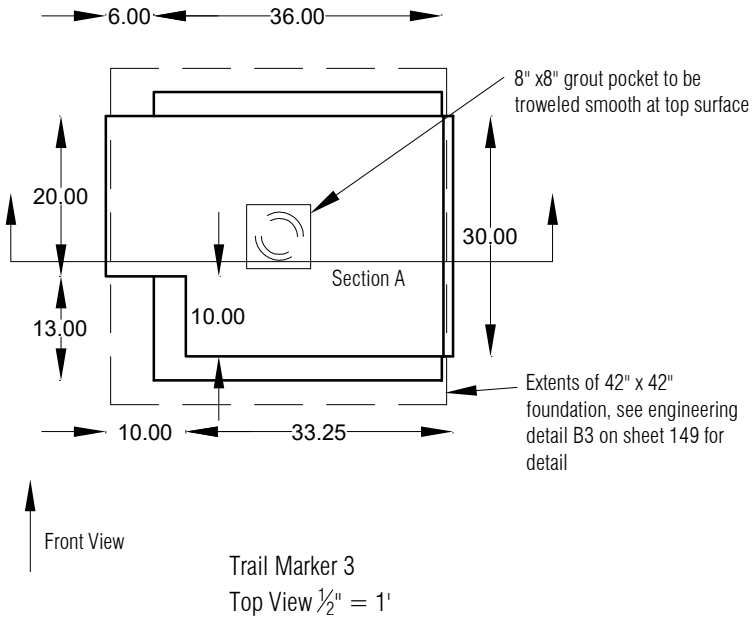
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NO.	DESCRIPTION

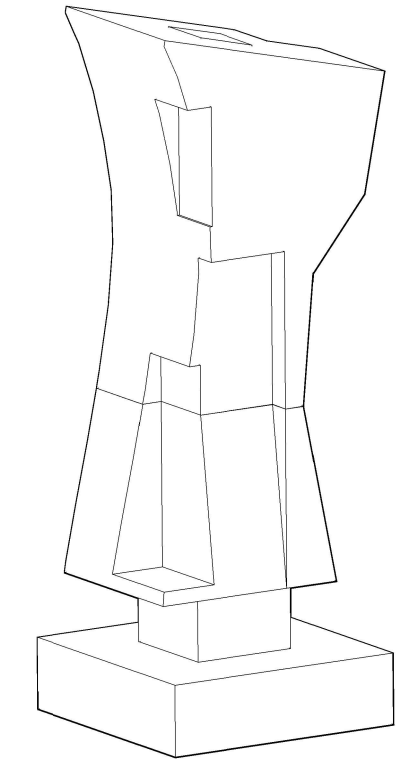
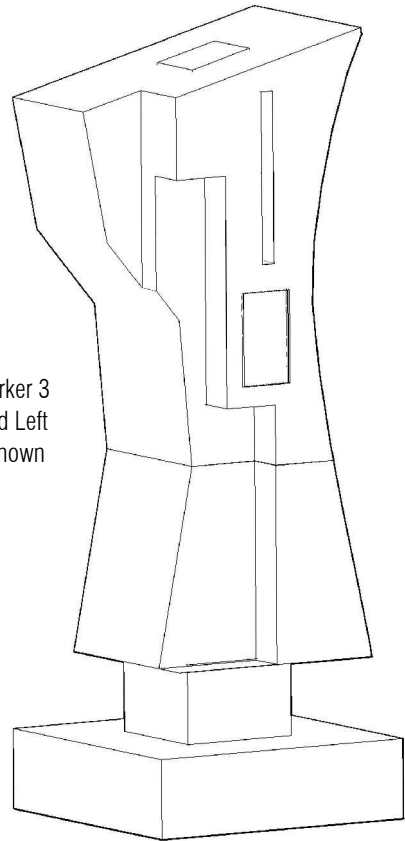
REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



Trail Marker 3  
Front and Left  
Coner Shown



Trail Marker 3  
Right and Rear  
Coner Shown

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074			

**TY LIN INTERNATIONAL**  
engineers | planners | scientists  
DES: MSI DR: MSI CK: MSI DATE: 9/16

**T.Y. LIN INTERNATIONAL**  
CONSULTING ENGINEER  
www.michaelsinger.com

**Michael Singer Inc.**  
Studio North - Ph: 802-464-2165  
POBox 682, Wilmington, VT 05363  
Studio South - Ph: 561-865-7683  
321 NW 1st Ave, Delray Beach, FL 33444

### Phoenix Grand Canal Integrated Art Trail Marker 3 (TM3)

Notes:

1. All engineering details and requirements supersede Integrated Art Drawings. Concrete Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.
2. All Trail Marker concrete to be cast with integral colors with an even acid wash finish. Concrete to be fiber reinforced with Nycon fibers or an approved equal. Mix design must be provided to Artist and EOR, with 7-day and 28-day strength test results, prior to casting. Color and finish samples must be provided to Artist and approved prior to casting.
3. All rubber texture inserts to be provided by Artist for placement in concrete molds. Stone insets to be procured by concrete fabricator for placement (using detail D4 on sheet 153) in concrete molds. Stainless steel frame and cover plate to be procured by concrete fabricator for placement (using detail D5 on sheet 153) in concrete molds. All color selection, texture, and stone placement locations and sizes will be indicated in Art Shop Drawings provided by Artist. Text (including font size and layout) for the stainless steel cover plate etching will be provided by Artist.
4. All exposed concrete corners and edges to have a  $\frac{1}{2}"$  chamfer unless noted otherwise.
5. See Integrated Art Drawings sheets 127 and 128 for Trail Marker locations.
6. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.

Call at least two full working days before you begin excavation.

**ARIZONA811**

Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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**CITY OF PHOENIX, ARIZONA**  
STREET TRANSPORTATION DEPARTMENT

**GRAND CANALSCAPE PHASE 1**  
UPTOWN AND GATEWAY NORTH

**INTEGRATED ART DRAWINGS**

DR: MSI DATE: 09/16	DES: MSI DATE: 09/16	CK: MSI DATE: 09/16	SHEET NO: 141	TOTAL SHEETS 153
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SCALE: N.T.S. or as noted

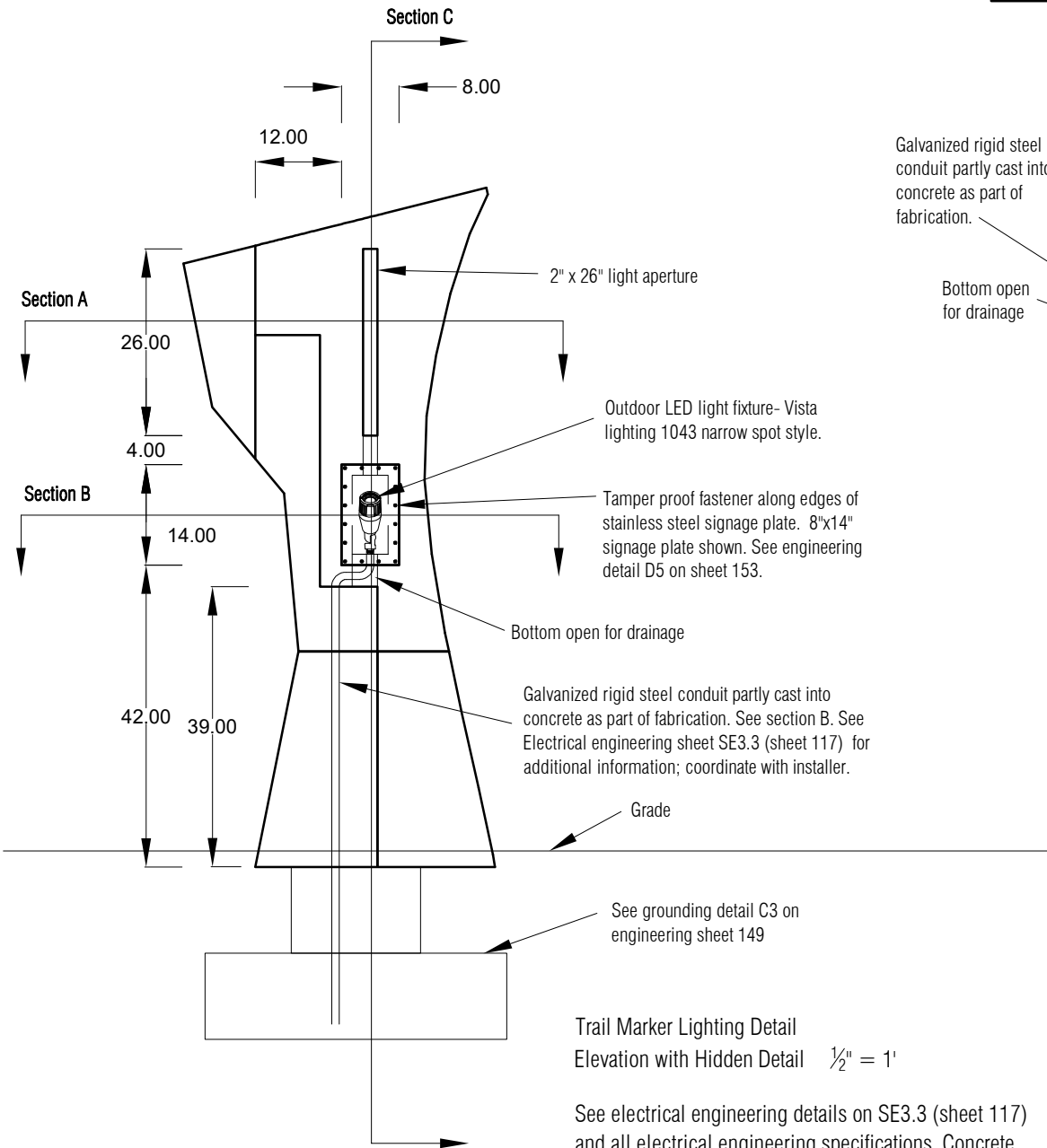


REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

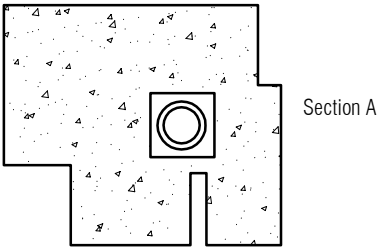
GRAND CANALSCAPE PHASE 1  
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD  
GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET



Vista Lighting 1043 fixture:  
1043-P-NS-30-D-MV-ND  
LED 600-750 lumens, narrow spot, 3000K light temp  
Model 3107 could be used if low-voltage is required  
See electrical engineering drawings SE3.3 (sheet 117)  
for further information.

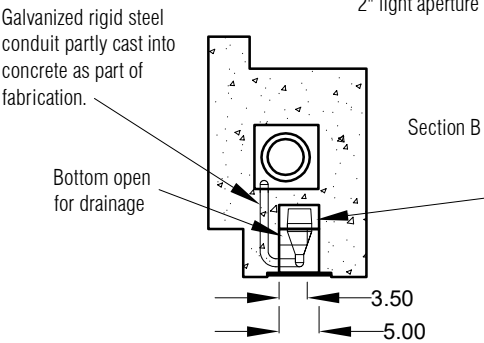
Trail Marker Lighting Detail  
Elevation with Hidden Detail 1/2" = 1'

See electrical engineering details on SE3.3 (sheet 117)  
and all electrical engineering specifications. Concrete  
Shop Drawings must be reviewed and approved by both  
structural and electrical Engineers of Record prior to  
fabrication.

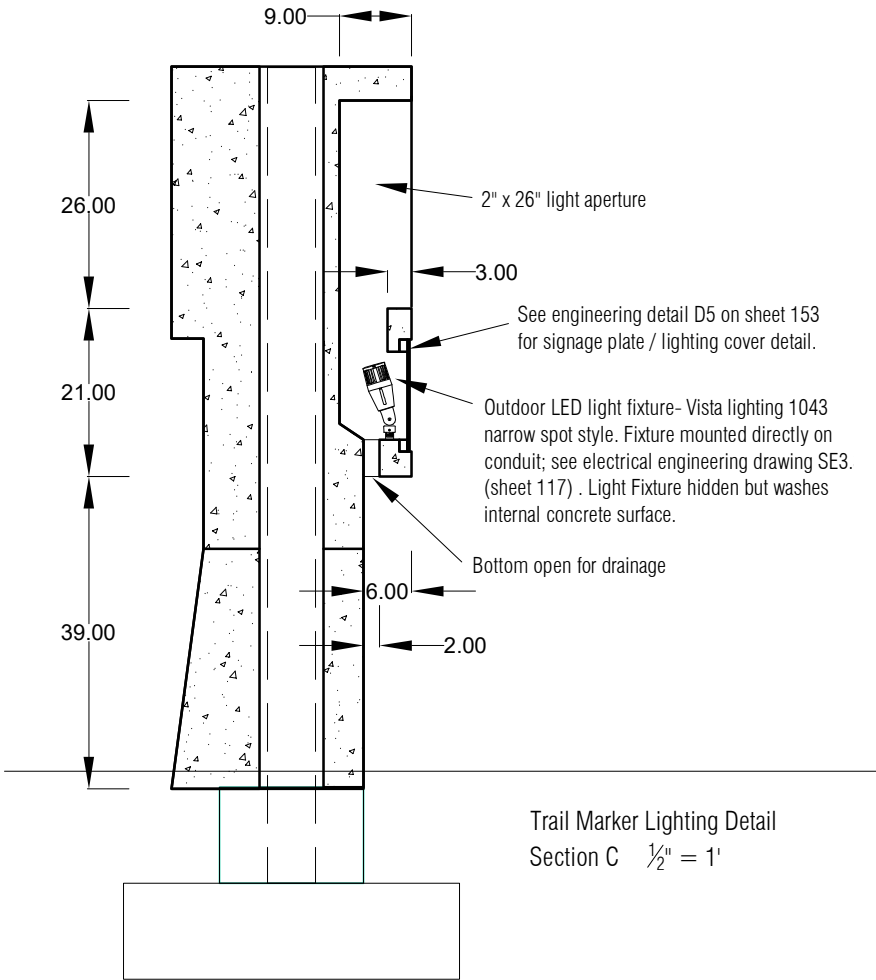


Section A

Trail Marker Lighting Detail  
Sections A and B 1/2" = 1'



Section B



Trail Marker Lighting Detail  
Section C 1/2" = 1'

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074			
TY LIN INTERNATIONAL engineers   planners   scientists			T.Y.LIN INTERNATIONAL CONSULTING ENGINEER		
DES: MSI	DR: MSI	CK: MSI	DATE: 9/16		



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321 NW 1st Ave, Delray Beach, FL 33444  
www.michaelsinger.com

### Phoenix Grand Canal Integrated Art Lighting Detail for Trail Marker 3 (TM3)

- Notes:
1. All engineering details and requirements supersede Integrated Art Drawings. Concrete Fabrication Shop Drawings must be approved by the Artist and approved and signed by the Engineer of Record (EOR) prior to fabrication.
  2. All Trail Marker concrete to be cast with integral colors with an even acid wash finish. Concrete to be fiber reinforced with Nycon fibers or an approved equal. Mix design must be provided to Artist and EOR, with 7-day and 28-day strength test results, prior to casting. Color and finish samples must be provided to Artist and approved prior to casting.
  3. Stainless steel frame and cover plate to be procured by concrete fabricator for placement (using detail D5 on sheet 153) in concrete molds. Text (including font size and layout) for the stainless steel cover plate etching will be provided by Artist.
  4. All exposed concrete corners and edges to have a 1/2" chamfer unless noted otherwise.
  5. Conduit to be provided and installed by concrete fabricator. Conduit layout must be shown in Concrete Fabrication Shop Drawings for EOR approval and Artist review. All conduit layout and openings for light fixtures must be coordinated with electrical contractor and concrete installer prior to fabrication to ensure functionality and accessibility for both installation and future maintenance.
  6. This sheet is intended to be reviewed at 11"x17" sheet size. Double scale if printing at 200% onto a 22"x34". All dimensions are nominal.



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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE 1  
UPTOWN AND GATEWAY NORTH

INTEGRATED ART DRAWINGS

DR: MSI	DES: MSI	CK: MSI	SHEET NO:	TOTAL SHEETS
DATE: 09/16	DATE: 09/16	DATE: 09/16	142	153
SCALE: N.T.S. or as noted				

ST87600074, DECEMBER, 2015

REVISION BY CITY OF PHOENIX				
DESCRIPTION		REV BY	CHK BY	DATE
NO.				

REVISION BY CITY OF PHOENIX				
DESCRIPTION		REV BY	CHK BY	DATE
NO.				

REVISION BY CITY OF PHOENIX				
DESCRIPTION		REV BY	CHK BY	DATE
NO.				

CODE AND STANDARD MANUALS:

1. INTERNATIONAL BUILDING CODE – 2012 EDITION
2. ACI BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE – ACI 318–11
3. AISC MANUAL OF STEEL CONSTRUCTION – 13TH EDITION.
4. ASCE STANDARD MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES – SEI/ASCE 7–10.
5. ALUMINUM DESIGN MANUAL – 2015 EDITION
6. AMERICAN WELDING SOCIETY D1.1 AND D1.3

DESIGN LOADS AND CRITERIA:

VERTICAL

- A. DEAD LOADS: DESIGN BUILDING ELEMENTS FOR THE ACTUAL IN–PLACE WEIGHTS OF ALL MATERIAL SHOWN ON THE CONSTRUCTION DOCUMENTS. BUT NOT LESS THAN THE FOLLOWING.

- B. DESIGN LOADS:
- LIVE

DEAD

ROOF..... 20 PSF

10 PSF (NON–REDUCIBLE)

CONCENTRATED...300 LB

- C. ROOF SNOW LOAD:
- GROUND SNOW LOAD

FLAT ROOF SNOW LOAD

SNOW IMPORTANCE FACTOR

Pg = 0 PSF

Pf = 0 PSF

Is = 1.0

HORIZONTAL

- A. WIND LOAD:
- OCCUPANCY

BASIC WIND SPEED

WIND IMPORTANCE FACTOR

WIND EXPOSURE CATEGORY

I

120 MPH

Iw = 1.0

C

- B. SEISMIC LOAD:
- ANALYSIS PROCEDURE PER ASCE 7–10

SOIL SITE CLASS: D

SPECTRAL RESPONSE ACCELERATION

Ss = 0.173

S1 = 0.057

EARTHQUAKE SPECTRAL RESPONSE ACCELERATION PARAMETERS

SDs = 0.185

SD1 = 0.092

SEISMIC IMPORTANCE FACTOR

Ie = 1.0

SEISMIC DESIGN CATEGORY

B

GENERAL:

1. STRUCTURE DRAWINGS ARE NOT STAND–ALONE DOCUMENTS AND ARE INTENDED TO BE USED IN CONJUNCTION WITH CIVIL, ART, ELECTRICAL, AND DRAWINGS FROM OTHER DISCIPLINES. THE CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS INTO THE SHOP DRAWINGS AND FIELD WORK.
2. COORDINATE DIMENSIONS OF ALL OPENINGS, DEPRESSIONS, BLOCKOUTS, ETC. WITH ART DRAWINGS, DRAWINGS FROM OTHER DISCIPLINES, PROJECT SHOP DRAWINGS, AND FIELD CONDITIONS PRIOR TO SHOP DRAWING SUBMITTAL.
3. CONTRACTOR’S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.
4. SHOP DRAWINGS SHALL BE FURNISHED AND REVIEWED BEFORE ANY FABRICATION OR ERECTION IS STARTED. THE CONTRACTOR SHALL REVIEW AND APPROVE SHOP DRAWINGS PRIOR TO SUBMITTAL TO THE ENGINEER AND ARTIS FOR REVIEW. POORLY EXECUTED SHOP DRAWING WILL BE REJECTED AND SHALL BE RESUBMITTED.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION.
6. NOTCHING OR CUTTING ANY STRUCTURAL MEMBER IN FIELD IS PROHIBITED.

7. REMOVAL OF FORMS AND SHORING SHALL BE IN ACCORDANCE WITH ACI 347. WHERE CONCRETE MUST SUPPORT SUPERIMPOSED LOADS PRIOR TO ATTAINING THE SPECIFIED DESIGN STRENGTH, RESHORE CONCRETE IN ACCORDANCE WITH ACI 347. RESHORING SHALL NOT BE REMOVED SOONER THAN 28 DAYS FROM THE DATE OF POUR OR UNTIL CONCRETE HAS ATTAINED THE SPECIFIED DESIGN STRENGTH.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO ALL APPLICABLE STANDARDS SET FORTH BY OSHA, INCLUDING THE FOLLOWING REQUIREMENTS FROM STANDARDS – 29 CFR, SECTION 1926, SUBPART R:

- A. THE ALUMINUM ERECTION CONTRACTOR SHALL NOT ERECT ALUMINUM UNLESS THEY HAVE RECEIVED WRITTEN NOTIFICATION FROM THE CONTRACTOR THAT THE CONCRETE IN THE FOOTINGS, PIERS AND WALLS OR THE MORTAR IN THE MASONRY PIERS AND WALLS HAS ATTAINED, ON THE BASIS OF AN APPROPRIATE ASTM STANDARD TEST METHOD OF FIELD–CURD SAMPLES, EITHER 75 PERCENT OF THE INTENDED MINIMUM COMPRESSIVE DESIGN STRENGTH OR SUFFICIENT STRENGTH TO SUPPORT THE LOADS IMPOSED DURING STEEL ERECTION.

- B. ANCHOR RODS (ANCHOR BOLTS) SHALL NOT BE REPAIRED, REPLACED OR FIELD–MODIFIED WITHOUT THE APPROVAL OF THE PROJECT STRUCTURAL ENGINEER OF RECORD.

PRIOR TO ERECTION OF COLUMNS, THE CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE ALUMINUM ERECTOR IF THERE HAS BEEN ANY REPAIR, REPLACEMENT OR MODIFICATION OF THE ANCHOR RODS (ANCHOR BOLTS).

PROVIDE STRUCTURE ENGINEER A COPY OF WRITTEN NOTIFICATION WHEN IT IS PROVIDED TO THE ALUMINUM ERECTOR.

- C. NO MODIFICATION THAT AFFECTS THE STRENGTH OF A ALUMINUM JOIST OR ALUMINUM JOIST GIRDER SHALL BE MADE WITHOUT THE APPROVAL OF THE PROJECT STRUCTURAL ENGINEER OF RECORD.

DRAWINGS:

1. DO NOT SCALE DRAWING.
2. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN. DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. DETAILS NOTED "TYP." APPLY TO ALL SIMILAR CONDITIONS. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ELSEWHERE ON THE PROJECT.

FOUNDATION AND SUBSURFACE PREPARATION:

PER GEOTECHNICAL INVESTIGATION EEG PROJECT NO. A15–178 BY EARTHWORKS ENGINEERING GROUP, LLC. DATED MAY 5, 2015.

ALL STRUCTURAL FILL AND BACKFILL PLACED AND COMPACTED SHALL BE UNDER CONTINUOUS ENGINEERING OBSERVATION, TESTING, AND IN ACCORDANCE WITH THE FOLLOWING:

1. FOLLOWING ALL CUT EARTHWORK, THE NATURAL SOILS SHALL BE SCARIFIED TO A DEPTH OF EIGHT INCHES AND MOISTURE CONDITIONED TO +/- 3% OPTIMUM MOISTURE CONTENT. THE SURFACE OF THE NATURAL SOILS SHOULD THEN BE COMPACTED TO A MINIMUM 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D–1557.
2. EXCAVATED SITE SOILS APPEAR SUITABLE FOR REUSE AS ENGINEERED FILL. SIEVE ANALYSIS AND ATTERBERG LIMITS TEST SHALL BE PREFORMED PRIOR TO ACCEPTANCE OF PROPOSED FILL MATERIAL.
3. ENGINEERED FILL SOIL SHALL HAVE A PLASTICITY INDEX OF 10 OR LESS.
4. ENGINEER FILL SHALL NOT CONTAIN FROZEN, ORGANIC, OR DECOMPOSABLE MATERIAL. COBBLES, BOULDERS, AND ROCK FRAGMENTS SHALL NOT BE PLACED WITHIN ENGINEER FILL.
5. ENGINEER FILL SHALL MEET THE FOLLOWING GRADATION:

ENGINEERED FILL GRADATION	
U.S. SIEVE SIZE	% PASSING
1½ INCH	100
NO. 4	70–100
NO. 200	20–40

6. ENGINEERED FILL SHALL BE STOCKPILED ON SITE, MOISTURE CONDITIONED, AND BLENDED TO A HOMOGENEOUS MIXTURE PRIOR TO USE.
7. ENGINEERED FILL SHALL BE PLACED IN HORIZONTAL LIFTS A MAXIMUM OF EIGHT INCHES IN LOOSE THICKNESS, MOISTURE CONDITIONED TO +/- 3% OPTIMUM MOISTURE CONTENT, AND MECHANICALLY COMPACTED. LIFT THICKNESS MAY NEED TO BE REDUCED BASED ON THE SIZE OF COMPACTION EQUIPMENT UTILIZED. ALL ENGINEERED FILL SHOULD BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D–1557.
8. PRIOR TO PLACING CONCRETE, FOUNDATION EXCAVATIONS SHALL BE CLEANED OF ANY SLOUGH, LOOSE SOIL, OR DEBRIS. FOOTING EXCAVATIONS SHALL BE SCARIFIED AND MOITURE CONDITIONED TO +/- 3% OPTIMUM MOISTURE CONTENT. FOUNDATION EXCAVATIONS SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D–1557.
9. MODIFIED PROCTOR TESTING (ASTM D–1557 ) IS REQUIRED TO DETERMINE THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT OF THE NATURAL SOILS AT THE BASE OF EXCAVATIONS. THE SURFACE OF NATURAL SOILS SHALL BE TESTED FOR COMPACTION PRIOR TO PLACING ENGINEERED FILL.
10. ENGINEER FILL SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER OF RECORD PRIOR TO USE.
11. COMPACTION TESTING SHALL BE PERFORMED ON ENGINEERED FILL AT A MINIMUM OF EVERY OTHER LIFT UNTIL FINISHED GRADE IS REACHED.
12. BASE OF FOOTING EXCAVATIONS AND FINISHED PAD GRADE SHALL BE TESTED PRIOR TO PLACING REINFORCEMENT AND POURING CONCRETE.



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		153	
T.Y. LIN INTERNATIONAL			T.Y. LIN INTERNATIONAL		
engineers   planners   scientists			CONSULTING ENGINEER		
DES: SK	DR: AO	CK: ZU	DATE: 9/8/16		

SHEET INDEX:

143. GENERAL NOTES
144. GENERAL NOTES CONTINUED
145. FOUNDATION PLAN
146. STRUCTURE ELEVATION
147. ROOF FRAMING PLAN
148. ROOF MEMBER PLANS
149. FOUNDATION DETAILS
150. ROOF FRAMING DETAILS
151. ROOF FRAMING DETAILS CONTINUED
152. PRECAST MEMBER DETAILS
153. PRECAST MEMBER DETAILS CONTINUED



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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

GENERAL NOTES

DR: AO	DES: SK	CK: ZU	SHEET	TOTAL
DATE: 6/16	DATE: 6/16	DATE: 9/8/16	NO:	SHEETS
SCALE: NOT TO SCALE			143	153



GRAND CANALSCAPE PHASE 1

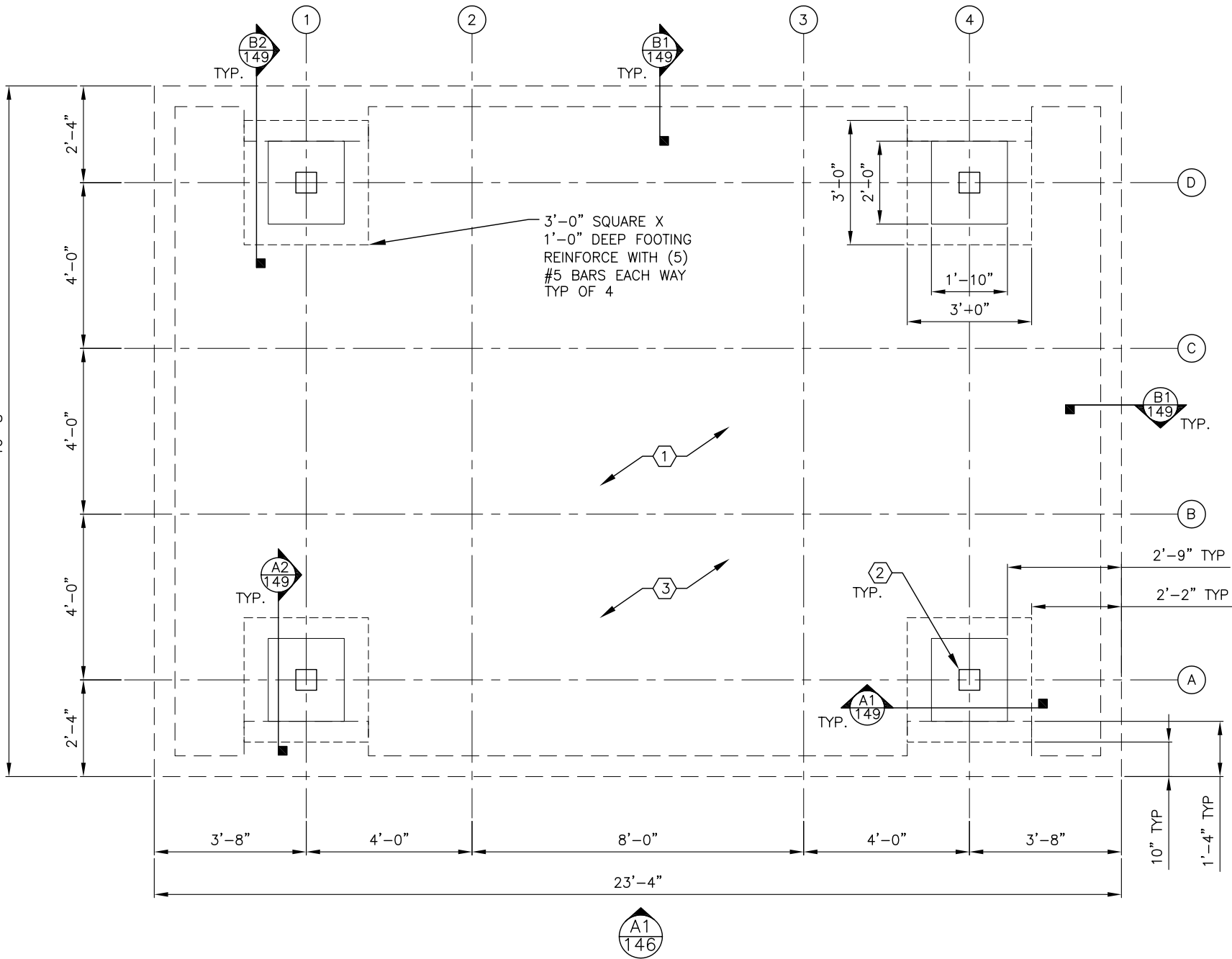
UPTOWN: 15TH AVENUE TO INDIAN SCHOOL ROAD

GATEWAY NORTH: GARFIELD STREET TO VAN BUREN STREET

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REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION



A1 FOUNDATION PLAN

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		153	
T.Y. LIN INTERNATIONAL engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: SK		DR: AO	CK: ZU	DATE: 9/8/16	

- GENERAL SHEET NOTES
1.

PROVIDE SLAB JOINTS AT 12'-0" ON CENTER MAXIMUM. THE AREA OF THE CONTROL JOINT SHALL NOT EXCEED A 2:1 RATIO. CONTROL JOINTS SHALL BE LOCATED AT COLUMN LINES WHERE THE LAYOUT PERMITS. AT RE-ENTRANT CORNERS THAT DO NOT HAVE CONTROL JOINTS. PROVIDE 2 - #4 X 3'-0" DIAGONAL TO THE RE-ENTRANT CORNERS. SEE SHEET 149 FOR TYPICAL SLAB JOINTS.
2.

SEE SHEET 149 FOR TYPICAL FOUNDATION SECTIONS AND DETAILS.

SHEET KEY NOTES

1.

4" CONCRETE SLAB REINFORCED WITH #4 @ 18" ON CENTER EACH WAY OVER A 6 MIL VAPOR RETARDER OVER 4" OF GRANULAR BASE COURSE, OVER 36" OF EXCAVATED AND RECOMPACTED NATURAL SUBGRADE. FINISH FLOOR ELEVATION - 100.00 FT.

2.

BASE PLATE SEE DETAIL A3 SHEET 149.

3.

COORDINATE LAYOUT OF 20"x20"x2" SQUARE CONCRETE PAVERS WITH ART DRAWINGS. ALL PAVER SHALL BE ADHERED TO CONCRETE SLAB USING 1/8" THICK LAYER OF THIN SET MORTAR.

Call at least two full working days before you begin excavation.

**ARIZONA811**

Arizona Blue Stake, Inc.

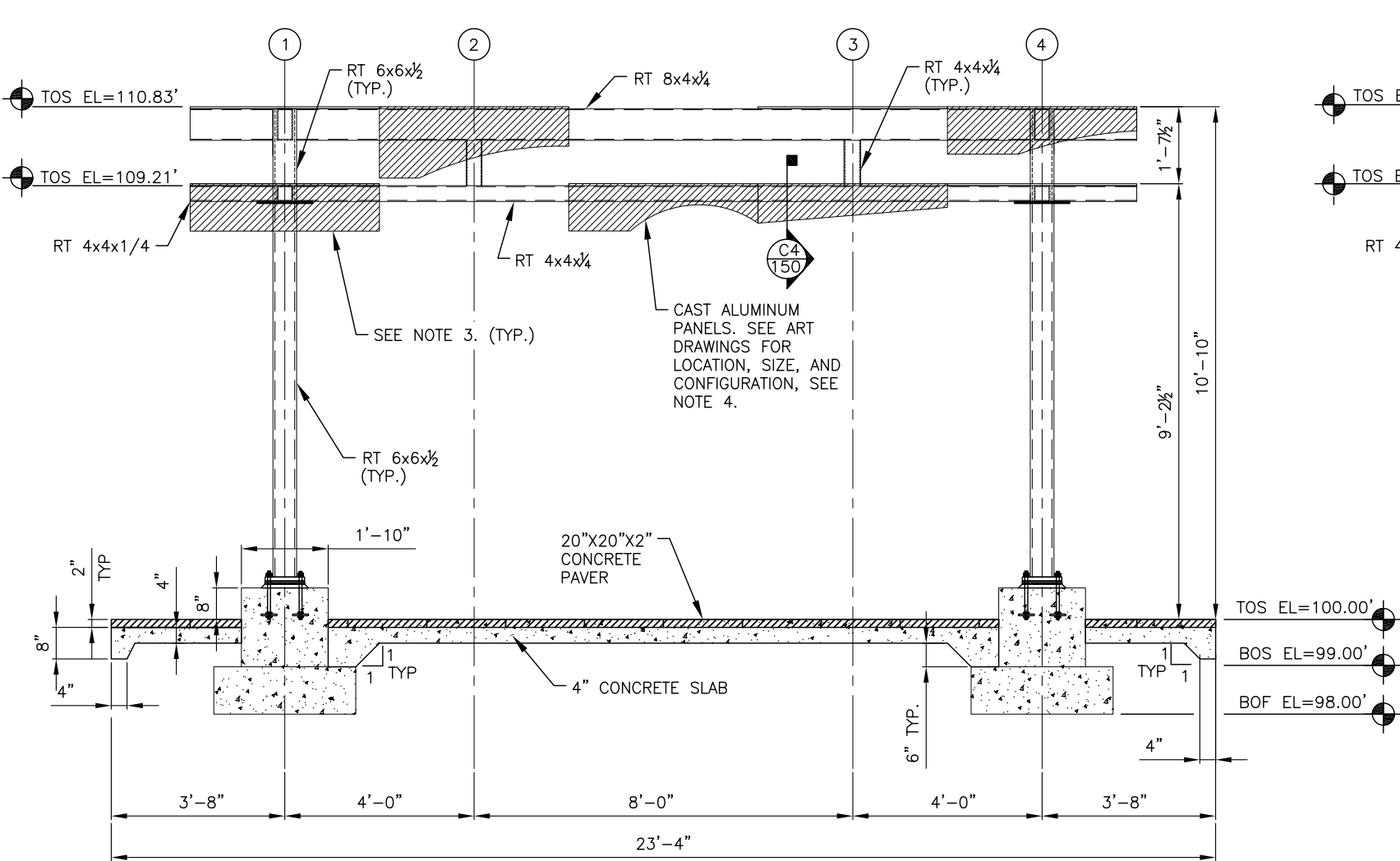
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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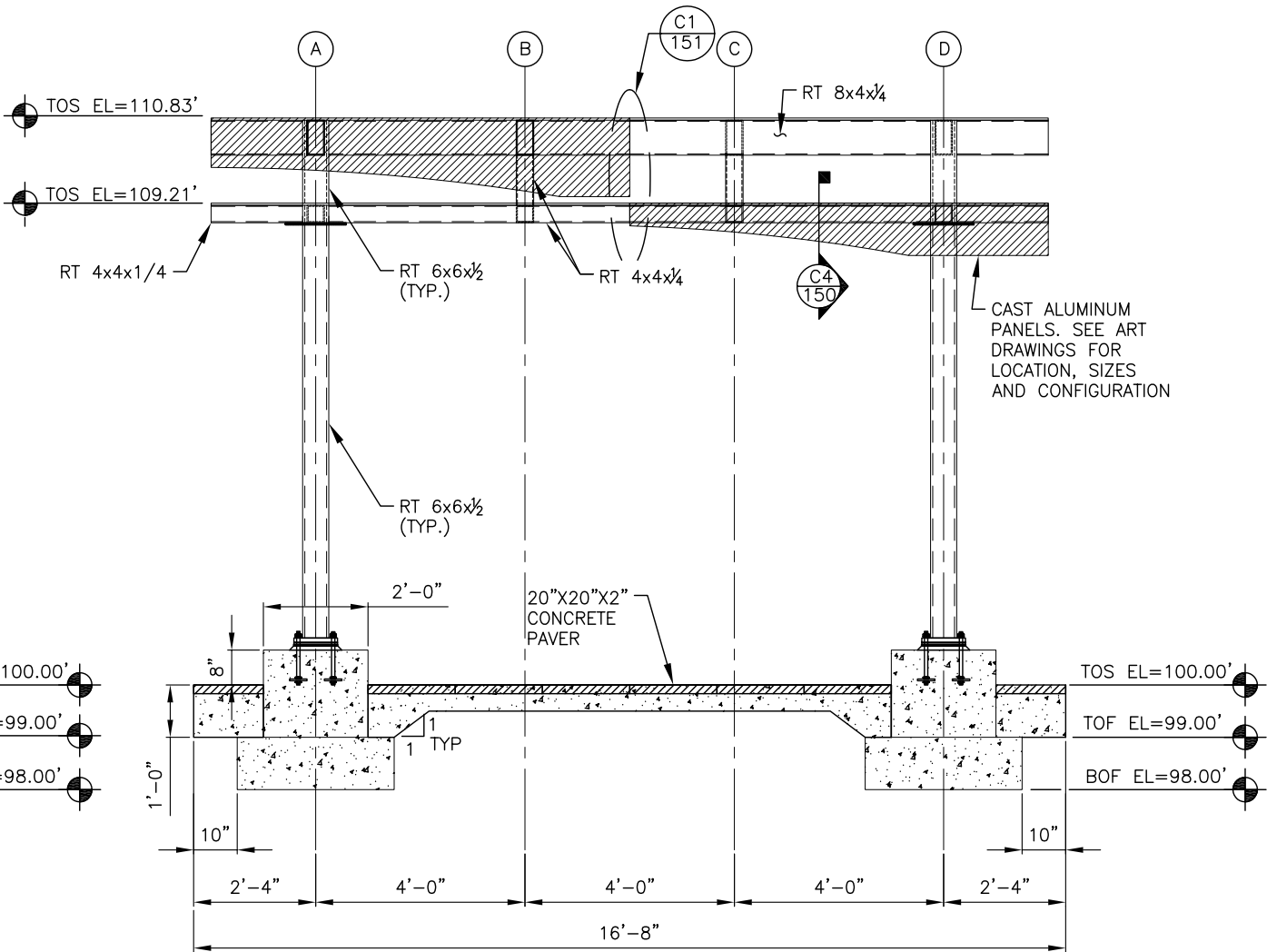
CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

FOUNDATION PLAN					
DR: AO	DES: SK	CK: ZU	SHEET NO:	TOTAL SHEETS	
DATE: 6/16	DATE: 6/16	DATE: 9/8/16	145	146	153
SCALE: NOT TO SCALE					



A1 ELEVATION 1

- NOTES:
- COORDINATE LIGHT ELEMENTS THAT WILL BE ATTACHED TO SHADE STRUCTURE WITH ELECTRICAL PLANS.
  - COORDINATE ELECTRICAL CONDUIT RUNNING THRU THE TUBE COLUMNS WITH ELECTRICAL PLANS.
  - FOR ATTACHMENT CONNECTION OF CAST ALUMINUM ART PANELS TO ALUMINUM TUBE FRAMING SEE SHEET 150 FOR CONNECTION DETAILS.
  - SEE DETAIL C4 ON SHEET 150 FOR ATTACHMENT OF CAST ALUMINUM ART PANEL TO PERFORATED ROOF PANEL.



A2 ELEVATION 2



CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ELEVATIONS FOR ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.

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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

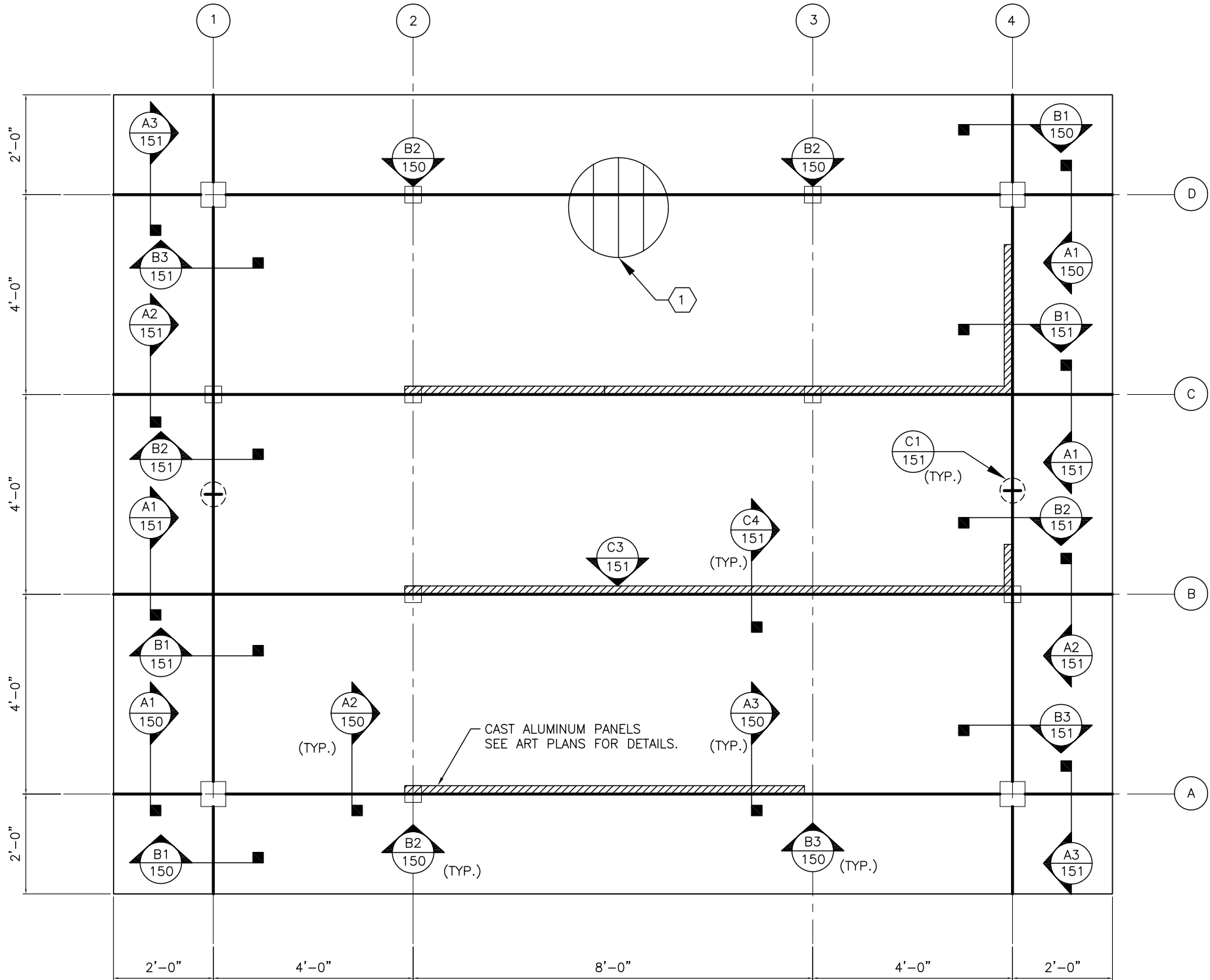
STRUCTURE ELEVATION

DR: AO	DES: SK	CK: ZU	SHEET NO:	TOTAL SHEETS
DATE: 6/16	DATE: 6/16	DATE: 9/8/16	146	153
SCALE: NOT TO SCALE				

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION

REVISION BY CITY OF PHOENIX	
NO.	DESCRIPTION



A1 FRAMING PLAN

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		153	
T.Y. LIN INTERNATIONAL engineers   planners   scientists			T.Y. LIN INTERNATIONAL CONSULTING ENGINEER		
DES: SK		DR: AO	CK: ZU	DATE: 9/8/16	

- KEY NOTES:
- SEE ART PLANS FOR 8 X 4 X 1/2 PERFORATED ALUMINUM PANEL LOCATION, SIZE, AND CONFIGURATION. SEE ATTACHMENT ON SHEET 148.

Call at least two full working days before you begin excavation.

**ARIZONA811**

Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)  
In Maricopa County: (602) 263-1100

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CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

ROOF FRAMING PLAN

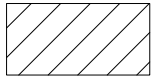
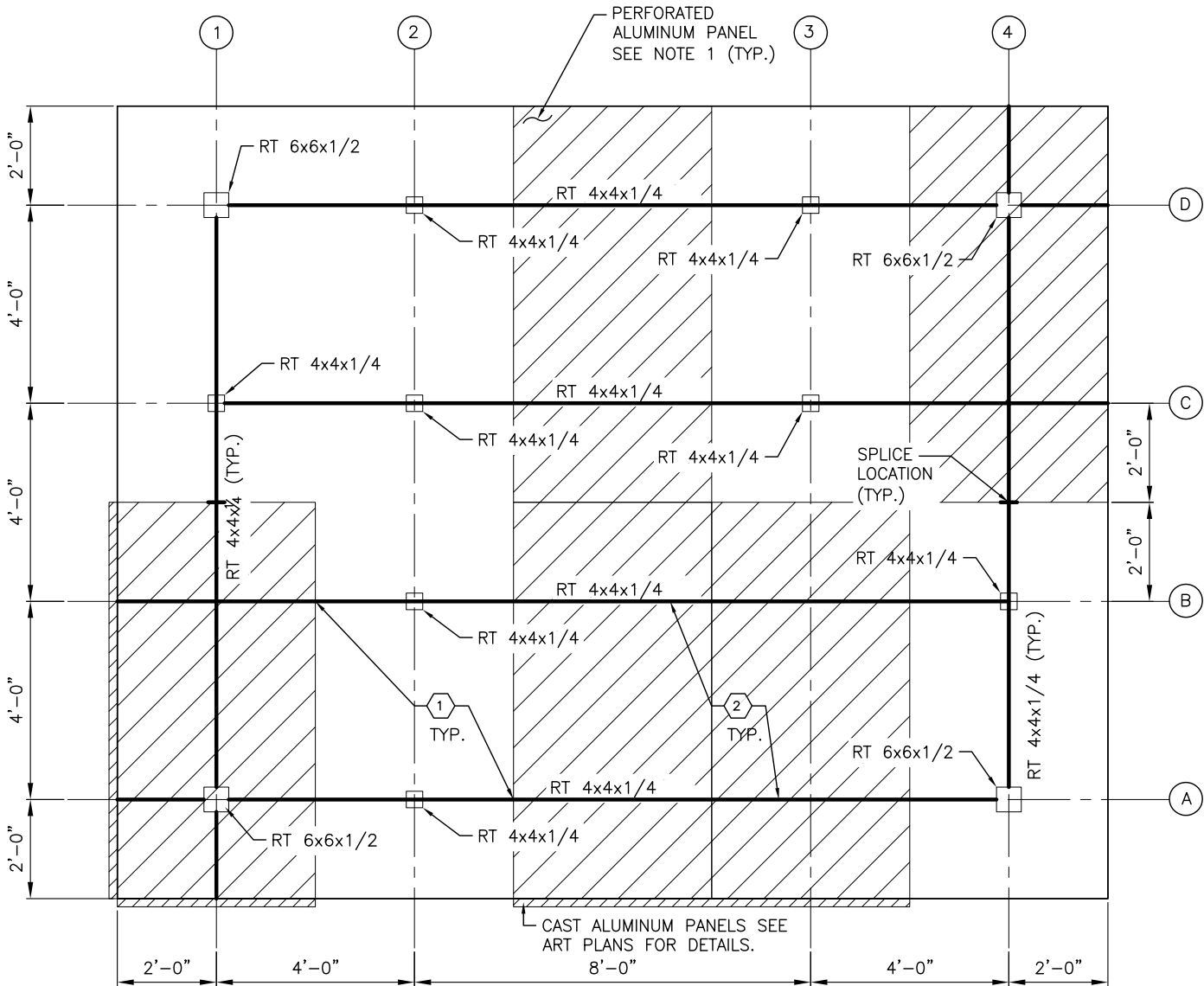
DR: AO	DES: SK	CK: ZU	SHEET NO:	TOTAL SHEETS
DATE: 6/16	DATE: 6/16	DATE: 9/8/16	147	153
SCALE: NOT TO SCALE				



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DESCRIPTION	REV BY CKD BY DATE

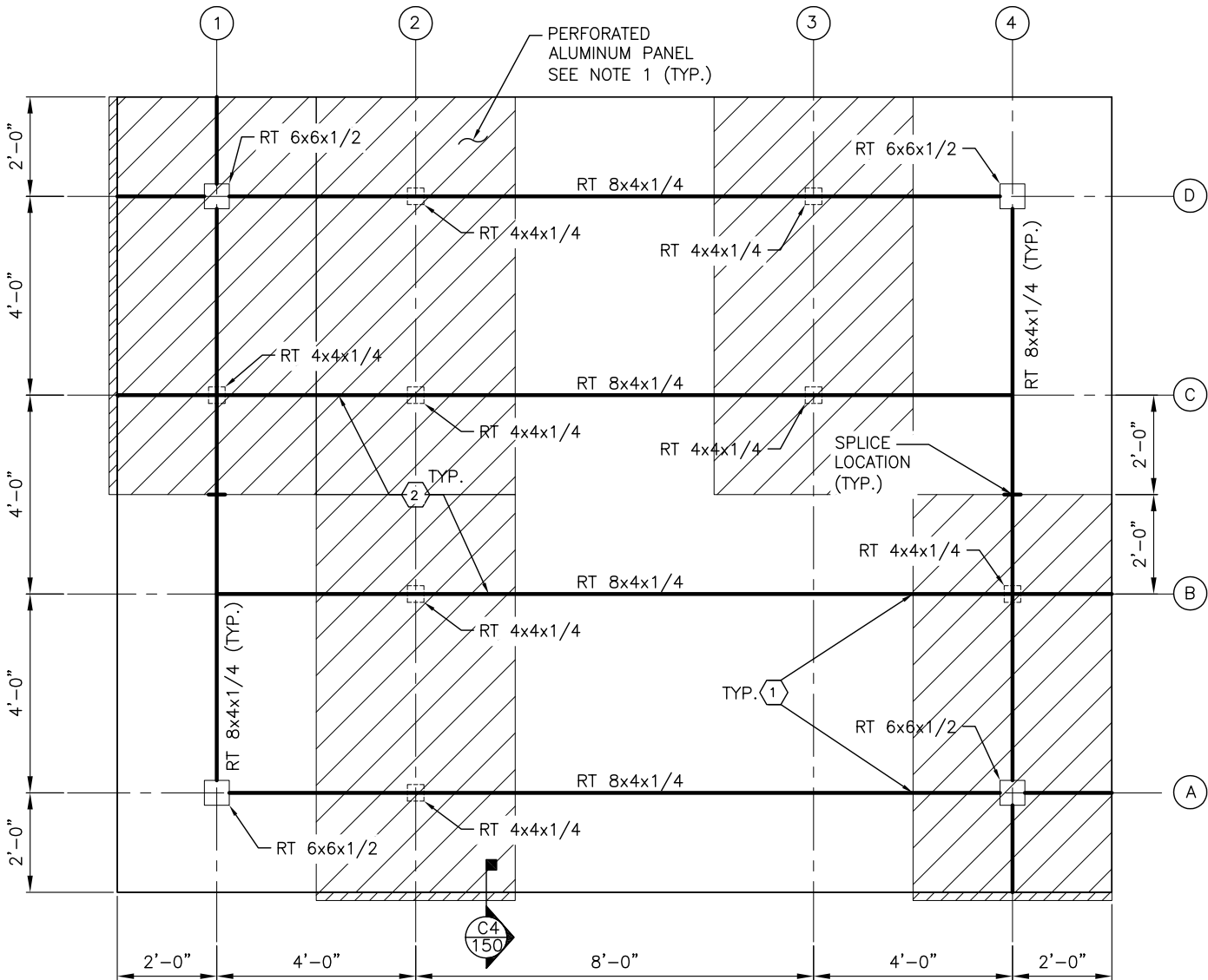
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DESCRIPTION	REV BY CKD BY DATE

REVISION BY CITY OF PHOENIX	
DESCRIPTION	REV BY CKD BY DATE



PANEL HATCH  
SEE ART PLANS

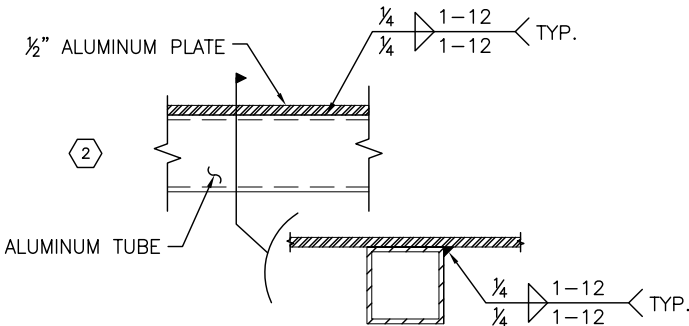
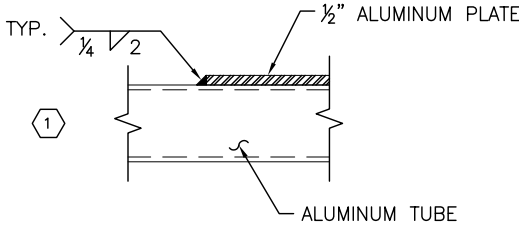
FRAMING MEMBERS – LOWER LEVEL



FRAMING MEMBERS – UPPER LEVEL

- NOTES:
1. SEE ART PLANS FOR 8 X 4 X 1/2 PERFORATED ALUMINUM PANEL LOCATION, SIZE, AND CONFIGURATION. ALL PANEL ATTACHMENTS SHALL BE COMPLETED IN THE SHOP PRIOR TO SHIPPING, SEE KEY NOTES 1 AND 2 FOR ATTACHMENT PATTERN.

KEYED NOTES



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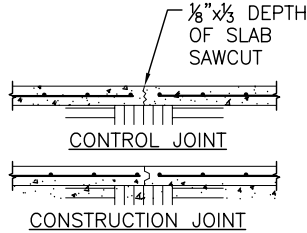
CITY OF PHOENIX, ARIZONA  
STREET TRANSPORTATION DEPARTMENT

ROOF MEMBER PLANS

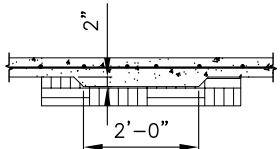
DR: AO	DES: SK	CK: ZU	SHEET NO:	TOTAL SHEETS
DATE: 6/16	DATE: 6/16	DATE: 9/8/16	148	153
SCALE: NOT TO SCALE				



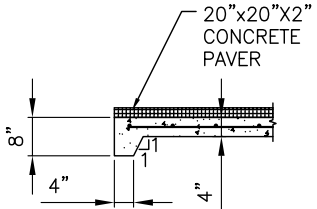
NOTE: AT CONTRACTOR'S OPTION A PLASTIC JOINT FORMER MAY BE INSTALLED INSTEAD OF THE SAWCUT.



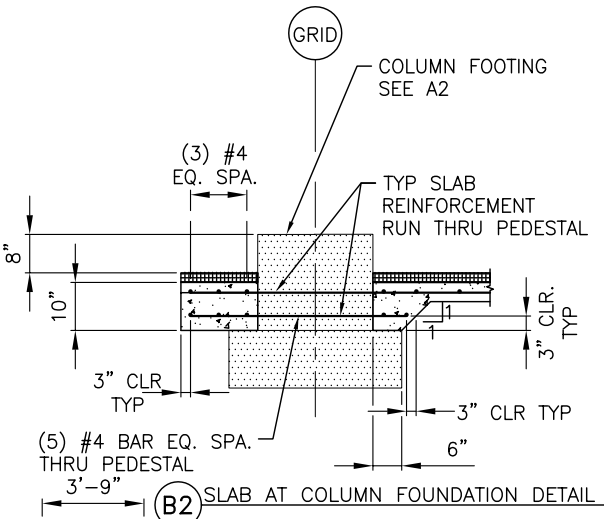
C1 TYPICAL SLAB JOINT



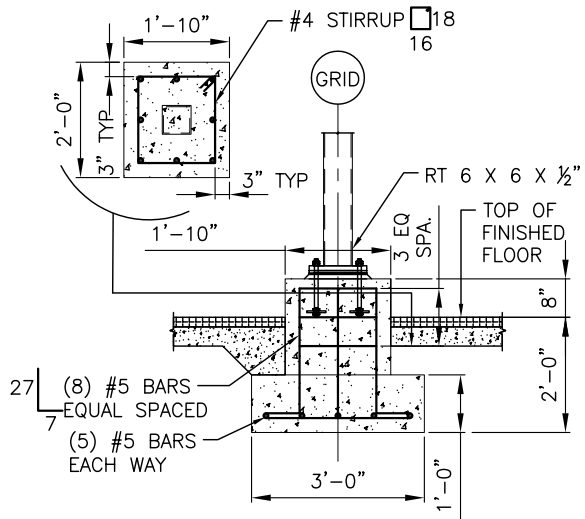
C2 TYPICAL DEPRESSED SLAB



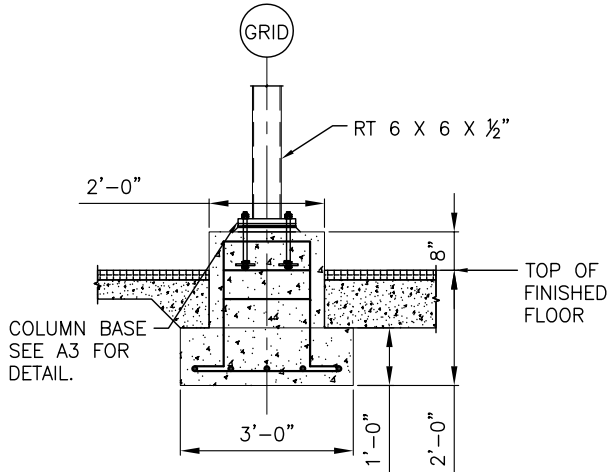
B1 TURNED DOWN SLAB EDGE



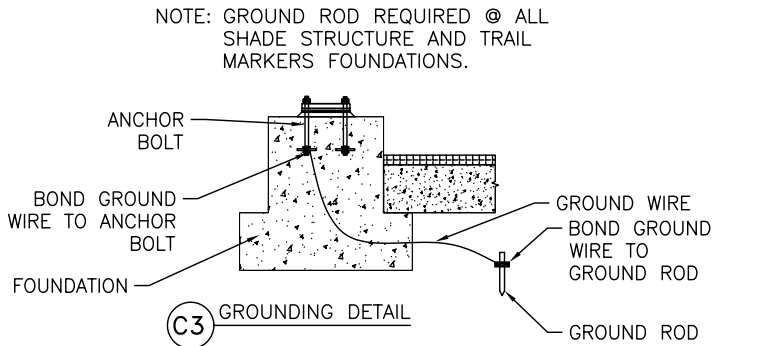
B2 SLAB AT COLUMN FOUNDATION DETAIL



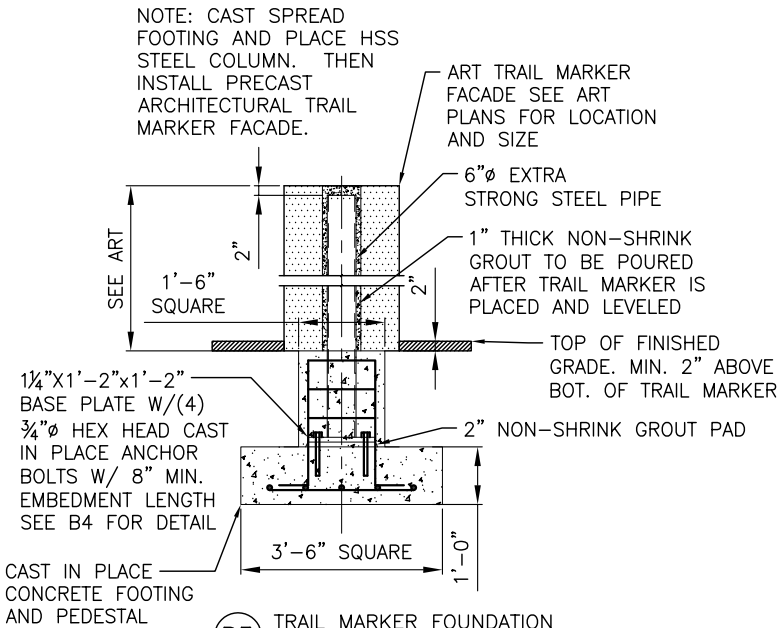
A1 SHADE STRUCTURE FOUNDATION DETAIL



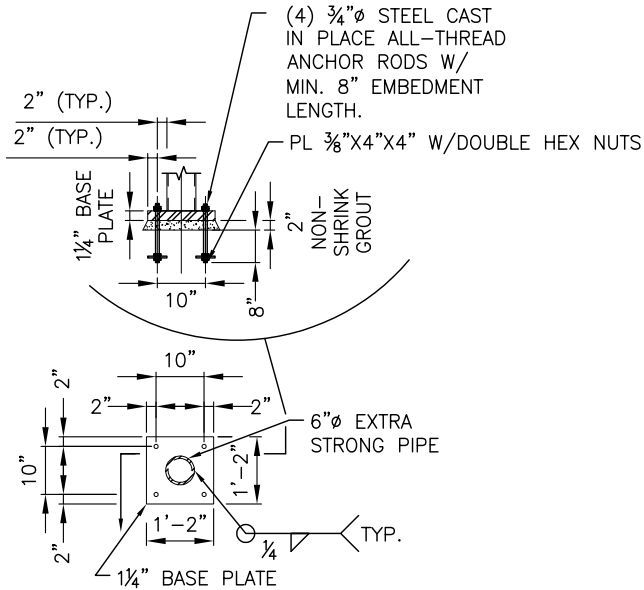
A2 SHADE STRUCTURE FOUNDATION DETAIL



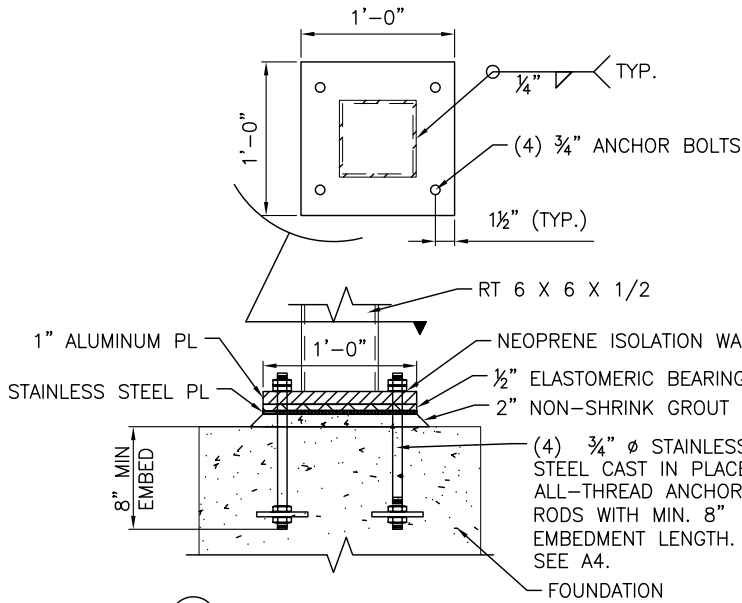
C3 GROUNDING DETAIL



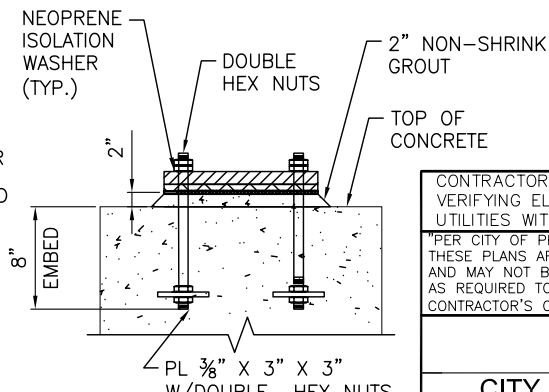
B3 TRAIL MARKER FOUNDATION



B4 TRAIL MARKER BASE PLATE DETAIL



A3 TYPICAL COLUMN BASE DETAIL



A4 ANCHOR BOLTS



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST87600074		153	
T.Y. LIN INTERNATIONAL			T.Y. LIN INTERNATIONAL		
engineers   planners   scientists			CONSULTING ENGINEER		
DES: SK	DR: AO	CK: ZU	DATE: 9/8/16		



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STREET TRANSPORTATION DEPARTMENT

FOUNDATION DETAILS

DR: AO	DES: SK	CK: ZU	SHEET NO:	TOTAL SHEETS
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SCALE: NOT TO SCALE				



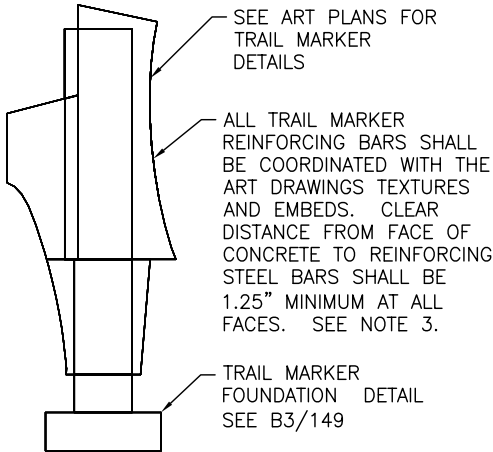




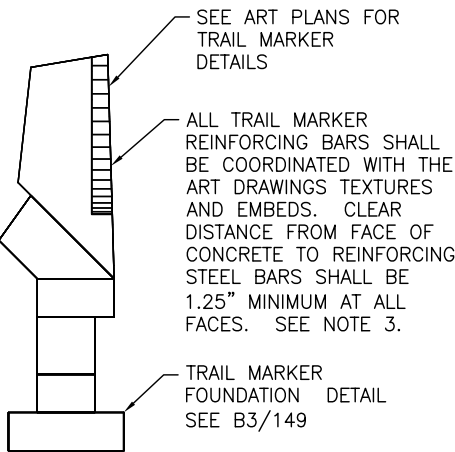
NO.	REV BY	CHK BY	DATE

NO.	REV BY	CHK BY	DATE

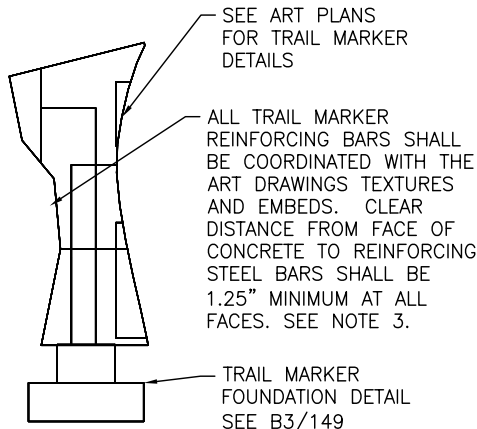
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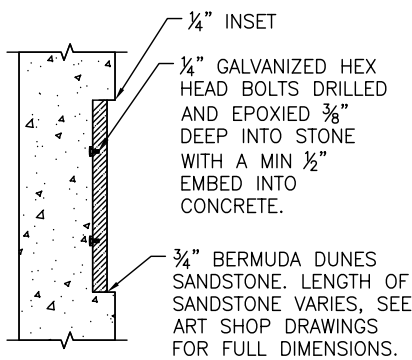
D1 TRAIL MARKER 1



D2 TRAIL MARKER 2



D3 TRAIL MARKER 3



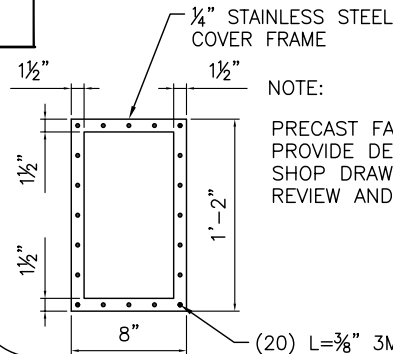
SANDSTONE EMBED

1" TAB WITH 1" RETURN WELDED TO FRAME. MIN. 4 TABS PER FRAME. ONE AT EACH CORNER.

1/4" STAINLESS STEEL COVER FRAME

1/4" STAINLESS STEEL PLATE W/ ETCHED SIGNAGE

COVER PALTE EMBED  
(TRAIL MARKER ONLY)



STAINLESS STEEL FRAME

NOTE:

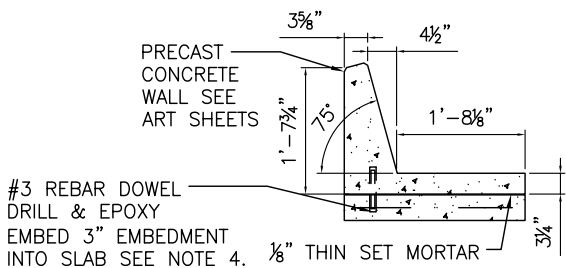
PRECAST FABRICATOR PROVIDE DETAIL ON SHOP DRAWINGS FOR REVIEW AND APPROVAL.

(20) L=3/8" 3M STAINLESS TAMPER PROOF SCREWS (DRILL AND TAP SCREW HOLES IN FRAME.)

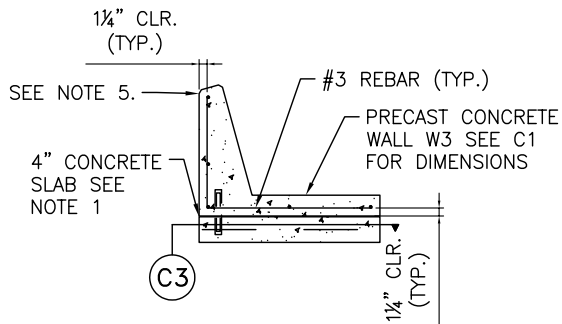
D5 TRAIL MARKER COVER PLATE DETAILS

NOTE:

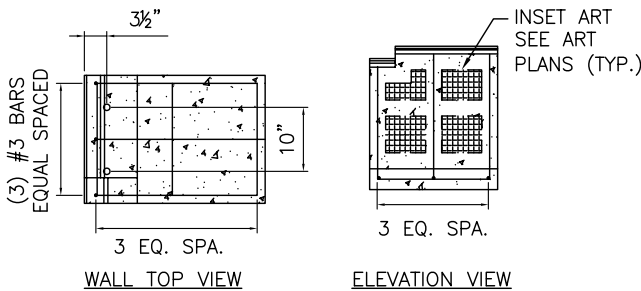
- 4" CONCRETE BASE SLAB SHALL BE REINFORCED WITH 6X6-W5.5XW5.5 WELDED WIRE MESH
- THE PRECAST CONCRETE FABRICATOR SHALL SUBMIT SHOP DRAWINGS SHOWING REINFORCEMENT LAYOUT AND CONCRETE MIX DESIGN TO STRUCTURAL ENGINEER AND ARTIST FOR REVIEW & APPROVAL PRIOR TO FABRICATION.
- ALL TRAIL MARKER FACES SHALL BE REINFORCED WITH A MIN. OF (3) #3 STEEL REINFORCING BARS AT EACH FACE IN THE VERTICAL DIRECTION AND #3 BARS IN THE HORIZONTAL DIRECTION AT AT A MAX SPACING OF 18 INCHES O.C. ALL REINFORCING BARS SHALL HAVE A MINIMUM CLEAR COVER OF 1 1/4" UNLESS NOTED OTHERWISE.
- ALL EPOXY DOWEL BARS SHALL BE EMBEDDED A MINIMUM OF 3" INTO THE PRECAST ELEMENT AND THE CONCRETE BASE SLAB. FABRICATOR PROVIDES 1/2" Ø X 3" HOLE SEE DETAIL A4.
- COAT BACK SIDE OF WALL ELEMENT IN CONTACT W/ SOIL W/ SPRAY LOCK SCP 578 OR APPROVED EQUAL INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- THE PRECAST CONCRETE FABRICATOR MAY CONSTRUCT THE TRAIL MAKERS OUT OF REINFORCED GFRG CONCRETE WITH A MINIMUM THICKNESS DF 3 1/2". THE FABRICATOR SHALL PROVIDE SHOP DRAWINGS, SPECIFICATIONS, AND CALCULATIONS TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF TRAIL MARKERS.



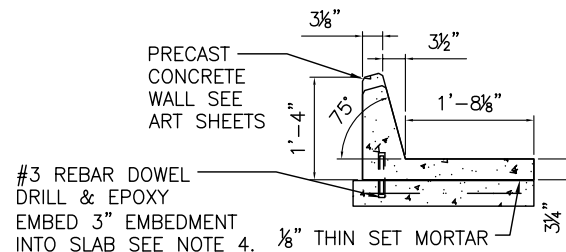
C1 PRECAST WALL W3 SECTION



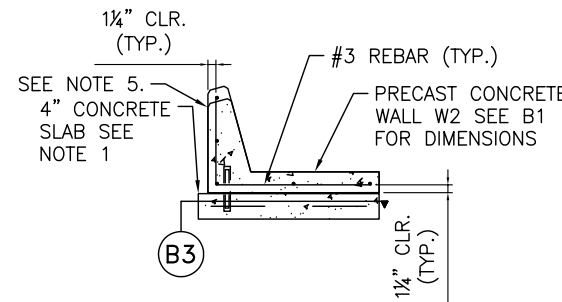
C2 PRECAST WALL W3 SECTION REINFORCEMENT



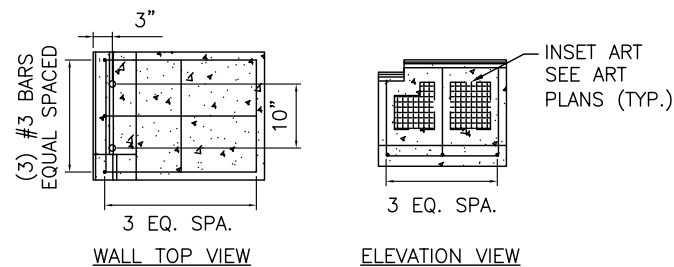
C3 PRECAST WALL W3 REINFORCEMENT



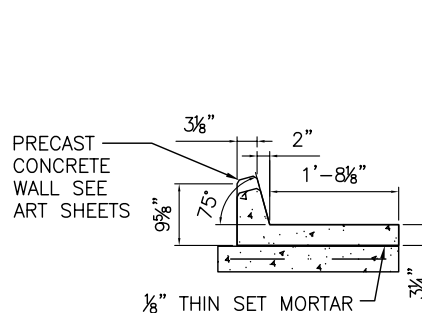
B1 PRECAST WALL W2 SECTION



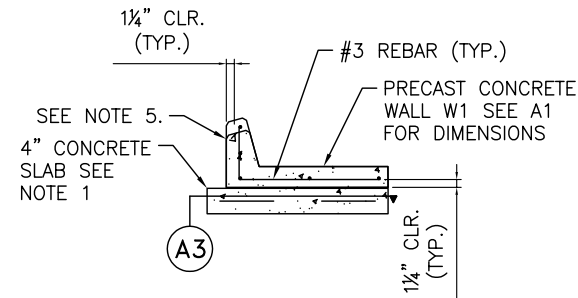
B2 PRECAST WALL W2 SECTION REINFORCEMENT



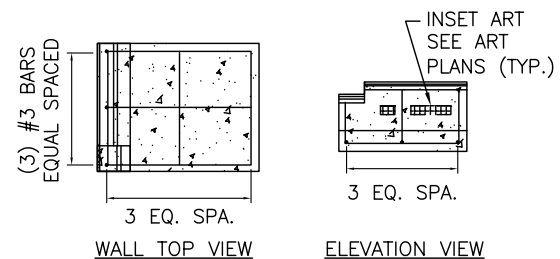
B3 PRECAST WALL W2 REINFORCEMENT



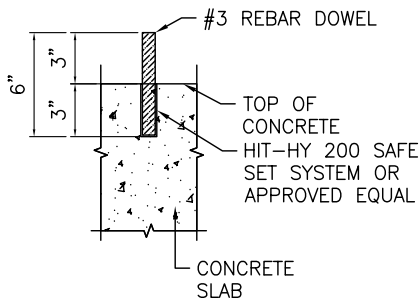
A1 PRECAST WALL W1 SECTION



A2 PRECAST WALL W1 SECTION REINFORCEMENT



A3 PRECAST WALL W1 REINFORCEMENT



A4 REBAR DOWEL

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STREET TRANSPORTATION DEPARTMENT

PRECAST MEMBER  
DETAILS CONTINUED

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SCALE: NOT TO SCALE				